FEB 2 1949

ENGINEERING NEWS-RECORD

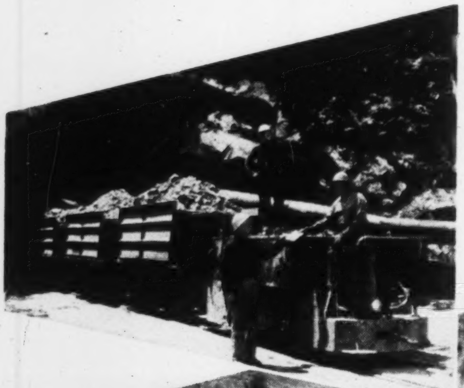
DECEMBER 30, 1948

Wallace K. Harrison—He plans buildings for world planners of the United Nations

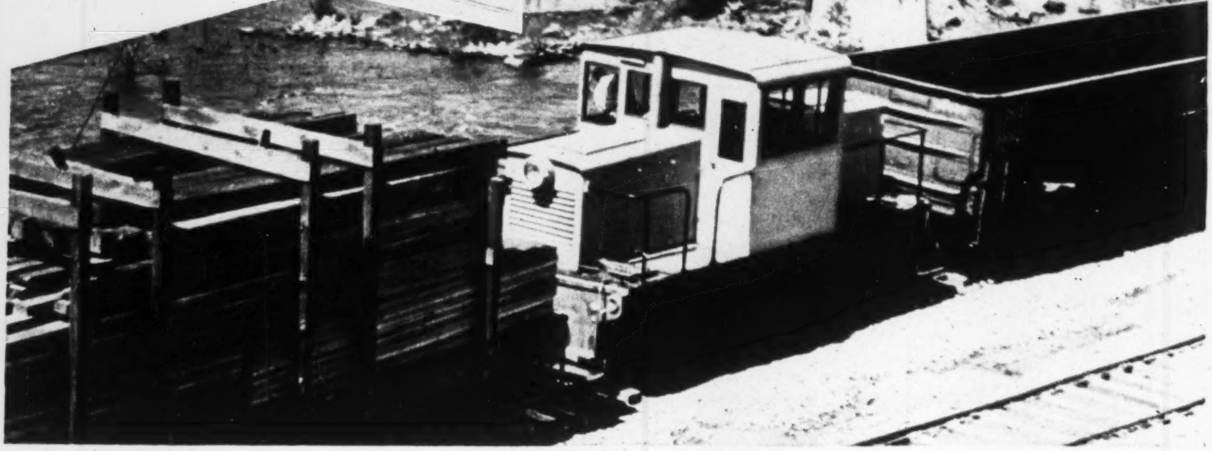
A McGRAW-HILL PUBLICATION

consolidate haulage . . . cut costs

Electrically



G-E battery locomotive on western tunnel job



G-E 45-ton diesel-electric which helped build Friant Dam

Versatile G-E Locomotives Handle Both Equipment AND Materials; Increase Contractors' Profits

More and more contractors are finding out that General Electric locomotives—diesel-electric and straight electric—will cut haulage costs because of the variety of loads they move. Besides hauling timber, rods, piles, heavy equipment—everything needed on a large job—they can also be relied upon to meet your exacting aggregate schedules. Operating costs are low, and their availability for service is 90-95 per cent.

Next time you're bidding a big job, ask your General Electric representative to help you estimate haulage costs with a G-E locomotive. If the economi
type of haulage, he will help yo
for the job from one of G.E.'

Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

ELECTRIFIED CONSTRUCTION
BETTER PRODUCT
LOWER COST

GENERAL ELECTRIC

THE CONSTRUCTION WEEK

AID TO CITY OFFICIALS—Sewer-service rate structures are being subjected to an exhaustive study by engineers, lawyers and public-works officials. A joint committee representing these groups is now at work and will make its first report sometime in April. Eventually there will be produced a handbook on philosophy and practice relating to this important utility service. It should be a boon to harassed municipal officials who will for the first time have a compendium on the legislative as well as technical aspects of sewer-service financing.

MITIGATING OVERTIME-ON-OVERTIME—Unions and contractors in several cities already have changed the payroll week to the Monday-Sunday basis that lawyers have recommended as a partial remedy for overtime-on-overtime confusion. In other cities, present agreements will expire before the change is made. No reluctance on the part of labor to agree on the modification has been reported.

APPRENTICE RACKET?—Trade schools training veterans in the building crafts were criticized as "rackets" by the 15th national conference on state labor legislation at Washington. The resolution adopted stated that many trade schools have been opened in numerous states to give six months or 78 week training courses in the building and construction trades crafts. The group heard charges that these private schools, operating under state approval, do not turn out "real" bricklayers, are misleading to veterans and are raising hob with the joint apprenticeship programs.

LUMBER FABRICATING MILL—Look for an announcement from a large lumber company with headquarters in the Midwest that it is expanding its timber fabricating service to cover the north-central U. S. The company will operate much like a steel fabricator. Working from owners' or engineers' plans, it will detail them, furnish the required lumber, fabricate and deliver it to the job ready for erection. The plan takes advantage of a special rail tariff that permits a stop-over of lumber in transit from west coast mills. Local dealers will participate in the scheme through franchise agreements.

HYDRO POWER FOR NORWAY—Not previously a scene of extensive nor spectacular construction projects, Norway may soon offer some surprises in these respects. The tip-off is contained in ECA buying authorizations approved for Norway, which in the first six months totaled nearly $40 million dollars, many of which related to hydro power development. Looking for self sufficiency, which her previous dependence on shipping and fishing did not provide, Norway wants to grow industrially. She has little coal, but some of the finest hydro power sites in the world. Look for important dam building jobs to develop in Norway's mountains.

MOTORWAYS FOR BRITAIN—England hopes soon to get ahead with construction of special-purpose roads, including limited access highways. Under ancient law, all classes of traffic—including cattle and sheep—have enjoyed unrestricted right to use the roads. A "special roads bill" that passed its second reading in the House of Commons in November would clear up the difficulty. The bill—an enabling measure—would provide special roads reserved for specified classes of traffic, such as motor vehicles. Under it, too, the Minister of Transport or any highway authority could block off intersecting roads and private access to a route in order to create a limited access highway.

U. S. BELT TIGHTENING?—Not everyone in the national administration favors speeded-up spending for public works. Closely following the reasoning of Marriner Eccles—former chairman and still a member of the Federal Reserve Board—some officials are urging cuts in spending and increased taxes to cut the national debt. According to these men, the U. S. cannot afford a public housing program now, because of the drain it would put on labor and materials.

POCKETBOOK PINCH—Analysis of November balloting on local-government bond issues indicates hard-boiled appraisal of projects by taxpayers. Voters turned thumbs down on 49 percent of the proposed $461 million in municipal projects. This compares with a 5 percent rejection a year previous. Waterworks, hospital and street-improvement issues—obviously necessary projects—were almost all approved. About half of the park and recreation proposals were accepted; public housing and slum-clearance aroused only slight interest; and airport bonds were generally turned down. Such selectivity is a measure of the taxpayer's idea of how he can get the most benefit from his shrinking dollar.

O'NEAL
STEEL

Announcing a Change in Names

Southern Steel Works
as of January 1, 1949, will be known as

O'NEAL STEEL WORKS

Fabricators of Structural Steel

Southern Steel Co.
as of January 1, 1949, will be known as

O'NEAL STEEL CO.

Warehouse Steel

**NO Change in Management,
in Policy, or in Service**

KIRKMAN O'NEAL
President

**745 North 41st Street
Birmingham, Alabama**

ENGINEERING
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EDITORIALS

Basically Wrong

Some surprise is reported to have been occasioned in the Congressional committee investigating the basing point pricing decision by testimony from some industrialists that they favored the Supreme Court's decision. It should not be surprising at all. Any governmental control or law will benefit some and penalize others. That is why a minimum of governmental interference with business is always the fairest. And it is why the government should confine its actions to rooting out and punishing collusion and monopolistic practices, without attempting to dictate the kind of a pricing system that must be used. If free-enterprise means anything, it means freedom from restraint from artificial rules that benefit one group more than another. The fact that some groups seek these peculiar benefits and are, therefore, free-enterprise's greatest enemy, does not change the situation. No satisfactory solution to the pricing question can be obtained by law. Some sellers will benefit, others will be penalized, and the same can be said for the buyer. The best thing all around is to let freedom—and fair competition—reign.

Too Little Knowledge

At the recent Highway Research Board meeting W. J. Turnbull of the Vicksburg laboratory staff gave new emphasis to the old adage that "A little knowledge is a dangerous thing." In a discussion of soil compaction he said that it is only in the last few years that we have come to realize how little we know about soil compaction. From purely theoretical concepts, he added, "we have become too complacent." This probably was due to the attention that was centered on laboratory determinations of soil characteristics and laboratory studies of how to obtain maximum density. Highly ingenious devices were developed for laboratory analyses of this kind and for quick field determination of the engineering characteristics of soils. The results were made the basis for prescribing how soils were to be handled to meet required conditions in the field. But in the end, all too frequently, the desired compaction was not obtained by the methods prescribed. Compaction obtained in the laboratory cannot be attained in the field due to the limitations of compacting equipment; about which we have much to learn, according to Mr. Turnbull. Also, soils in their natural state appear to have characteristics that cannot be duplicated quickly in an artificial manner. In other words, we do not yet know enough about soil as an engineering material or about compacting methods to predict with absolute confidence what exact characteristics we can impart to soils in dams, levees, highway or airfield bases or in the foundations of buildings. Failure to recognize that fact can only lead to trouble.

A Start on Prestressed Concrete

News that Philadelphia is going to build a prestressed concrete girder bridge is reported in this issue. It highlights the fact that American engineers have, for the most part, sat on the sidelines during the 20 years that European engineers have been developing both theory and practice in this significant field. Scared away by higher labor costs and lacking the European incentive to save steel, Americans have been reluctant to embrace the rather complicated mechanical processes involved. To be sure, prestressed beams have been made and tested in our laboratories, and prestressed concrete tanks have been built in rather large numbers. Also in the early 30's, the 230-ft. concrete arches of the Rogue River bridge in Oregon were built by one variation of prestressing technique—using jacks at the crown to induce compression in the ribs. And most recently, a warehouse floor slab has been prestressed by stretching its wire cable reinforcement. Except for this last named job, the Philadelphia work, while based on the same theory as these earlier projects, will use a different technique, in which high-strength wire reinforcement will be stretched with jacks reacting against the hardened concrete of the precast girders. Such high compression will be placed in the concrete that no subsequent loads can remove it and thus cause cracks. That at least is the theory, and it accords with results reported from France, where literally dozens of prestressed girder bridges are underway or completed; and from Belgium, too, where both building and bridge girders are being prestressed. In undertaking a modern prestressed concrete bridge, Philadelphia is serving American engineering admirably, and it may be hoped that the benefits to itself may be even greater than expected.

NEWS BRIEFS

Bridges—Studies are being made for the province of British Columbia for a proposed bridge across the Fraser River between AGASSIZ and ROSEDALE. Swan, Thodes & Wooster are consulting engineers on the project, estimated at nearly $3,000,000. . . . INDIANA's highway commission has reported that 1,089 bridges within the state are "narrow and unsafe." . . . The Narrangansett Bay Bridge Authority, R. I., has announced the acceptance of new and extensive plans for construction of an 8,100 ft. cantilever bridge, estimated to cost $20,000,000, over the east passage of lower Narrangansett Bay, between Jamestown and Newport. A clearance of 150 ft. over a length of 800 ft. of channel is provided.

Dams—Construction has been started by the Utah Construction Company on $10,000,000 Bonny Dam on the Republican River near HALE, COLO. The first work on the Bureau of Reclamation structure will involve building a 3-mile access road to the site. . . . Col Dwight F. Johns of the South Pacific Div., Corps of Engineers, has recommended immediate construction of a $16,250,000 dam on the East Fork of the Russian River, north of SAN FRANCISCO; storage would be 122,000 acre-feet. . . . Bids will be opened February 24 at PORTLAND, ORE., for the main structure of Detroit Dam on the North Santiam River in western Oregon. The contract probably will exceed $20,000,000; total cost of the dam, part of the Williamette basin flood control project, is estimated at $65,000,000. A conference of prospective bidders will be held in the Portland office of Colonel O. E. Walsh about February 1.

Hospitals—Bids for construction of a $6,000,000 Alaska native service hospital at ANCHORAGE will be called in January, the Department of Indian Affairs has announced. . . . OKLAHOMA CITY has been assured by the VA that contracts for its 1,000-bed, $15,000,000 hospital will be let early in 1950. . . . Construction will get under way shortly on a 500-bed capacity VA hospital in NEW ORLEANS. The 10-story structure and auxiliary buildings will cost $7,500,000; engineer-architects for the job are Faulkner, Kingsbury and Stenhouse, Washington, D. C., and Favrot and Reed, New Orleans.

Labor—U. S. Gypsum Co. has been charged by the NLRB with refusing to bargain with a 200-employee union at its MIDLAND, CALIF., plant. The union is the AFL Cement, Lime and Gypsum Workers Union, and a hearing has been set for January 25 in Los Angeles. . . . AFL building tradesmen and apprentices in the CHICAGO area will seek wage increases of 20 cents an hour early in 1949. Contracts between contractors and 110,000 union men expire May 31. . . . In the HOUSTON, TEX., area 25,000 building construction laborers are considering asking a 25-cent hourly increase. . . . An attempt is being made in NORTHERN CALIFORNIA to organize for collective bargaining purposes, chiefs-of-party, instrument-men, chainmen and rodmen working for contractors. The AFL operating engineers local has told California AGC chapters that a majority of such employees desire such an arrangement. A meeting is expected to take place soon.

Industrial Construction—Plans have been completed and preliminary work is scheduled to start this month on the Gulf States Utilities Company's service center at BEAUMONT, TEX. This multi-million dollar plant layout will bring together several departments, at present scattered throughout several buildings. Plans were prepared by Goleman and Rolfe and D. E. Steinman, and building will be done by Stone & Webster Engineering Corporation. . . . Northwest Natural Gas Co. has submitted plans to the provincial government to export 209,000,000 ft. of gas daily from ALBERTA, B. C., through a projected $80,000,000 pipe line to serve Spokane, Portland, and Seattle. . . . Howard T. Fisher and Associates, Inc., engineer-architects, have announced that construction will start next spring on an automobile shopping center on Lincoln Ave. on CHICAGO's north side. Patrons at the center will be able to make purchases while sitting in their automobiles. . . . Swiss Aluminum Co., of Lausanne, Switzerland, expects to start construction next spring on a $5,000,000 rolling mill at JACKSON, TENN. The plant will operate under the name of Aluminum Foils, Inc.

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The Cover

Planning work that led to last week's $20,000,000 construction contract for a skyscraper headquarters of the United Nations was a matter to be taken in stride by Wallace K. Harrison—who numbers the famed Trylon and Perisphere of the late New York World's Fair and a good slice of Radio City among his architectural achievements.

The contract, covering the first building at the UN's 17-acre site in mid-Manhattan, New York City, went to an unusual combination of four major building firms (Engineering News-Record Dec. 23, p. 48).

Harrison has been hard at work on the project for more than two years in his capacity as director of planning for the world organization. Basically an architect, to no small measure he is also a first-rate diplomat who must mesh the varied training and opinions of 20 associates from 15 different nations who make up the board of design consultants, special consultants and associate architects and engineers. His headquarters planning staff—now at work on two other UN headquarters buildings — comprises 70 architects, designers and draftsmen.

A native of Worcester, Mass., Harrison got his first architectural job with the firm of McKim, Mead and White in New York City, meanwhile studying at night at the School of Architecture of Columbia University. After an interruption for Navy service in the first World War, he took his degree, and then won the Rotch Scholarship, which entitled him to three years of study in Europe.

After his return to the U. S., he was one of a group of six architects who worked on the Radio City development in New York City for a period of nearly 10 years. Subsequently, he prepared designs for the Trylon and Perisphere — theme buildings of the New York Fair; and for many structures both in the United States and abroad.

Now 53, and head of the New York architectural firm of Harrison and Abramovitz, Harrison has found time for many pursuits. He has been a professor of design at Columbia; chairman of the Department of Research and City Planning at Yale University; associate architect for the New York City Board of Education, and a member of the Art Commission of New York City. With C. E. Dobbins, he is co-author of the book "School Buildings of Today and Tomorrow."

Carrying his profession almost to the ultimate, his Long Island farm home was built of a number of new materials, including aluminum and cement-asbestos material, which he wished to test personally. The farm itself is the scene of numerous agricultural experiments.

ENGINEERING NEWS-RECORD

DECEMBER 30, 1948 VOL. 141 NO. 27

Record $17.4 billion volume tops all construction marks

Engineering News-Record figures put 1948 dollar volume above even war years—New records established in almost every category—Housing credited for share of rise

Despite some shortages, rising prices and labor troubles, the U. S. construction industry in 1948 completed the biggest construction year ever recorded, on a dollar volume basis.

Estimated dollar volume for all construction during the year—including heavy engineering work, housing and other factors—was $17.4 billion, according to year-end totals compiled by ENGINEERING NEWS-RECORD.

This total, exceeds by more than $3.7 billion the total for 1947—which then was itself an all-time record. The figure is far above even the wartime years, which reached a peak with $12.8 billion in 1942.

For 1949, ENR statisticians predict another four percent rise, with the total dollar volume for the coming year expected to reach $18.1 billion (see p. 40 of this issue for a detailed analysis of this prediction).

Physical volume increase

It was notable, however, that for their $17.4 billion in 1948, construction purchasers actually bought only slightly more actual construction than they bought in 1946, when the dollar volume was $13.7 billion. The gain in physical volume—although up 11 percent over 1947—was only about two percent over 1946.

Of the total for 1948, heavy engineering construction reported by ENR reached $7.2 billion—a 26 percent rise over the record of $5.659 billion for 1947. This figure, incidentally, was within one percentage point of the ENR forecast of a 25 percent rise in this category. Highest for any peacetime year, this figure was exceeded only once in the history of the ENR tabulation—in the war year of 1942, when $8 billion was recorded.

Huge jumps in dollar volume for utility construction, public buildings, bridge, highway and irrigation and flood control construction accounted for the lion's share of the rise in total. but eight of nine categories listed by this journal's Business News department showed increases.

A general breakdown of the $17.4 billion total shows $1.2 billion for federal work; $4.1 for state and municipal; $12.2 for private construction.

The continuing rise in construction costs showed signs of a definite slackening, although increases were noted. For 1948, the ENR Cost Index showed a 12 percent rise over last year; in 1947 the index rose 17 percent over 1946; and in 1946 the rise was 18 percent over 1945.

Increasing labor productivity, some firming of materials prices, generally increasing supplies of materials—and a few spectacular price breaks such as that recently recorded in lumber—were credited for the apparent betterment in the overall cost picture.

On the dollar-volume basis, five of the nine categories of the ENR total showed new all-time highs; one was a peacetime high, and only one showed a slight drop under 1947.

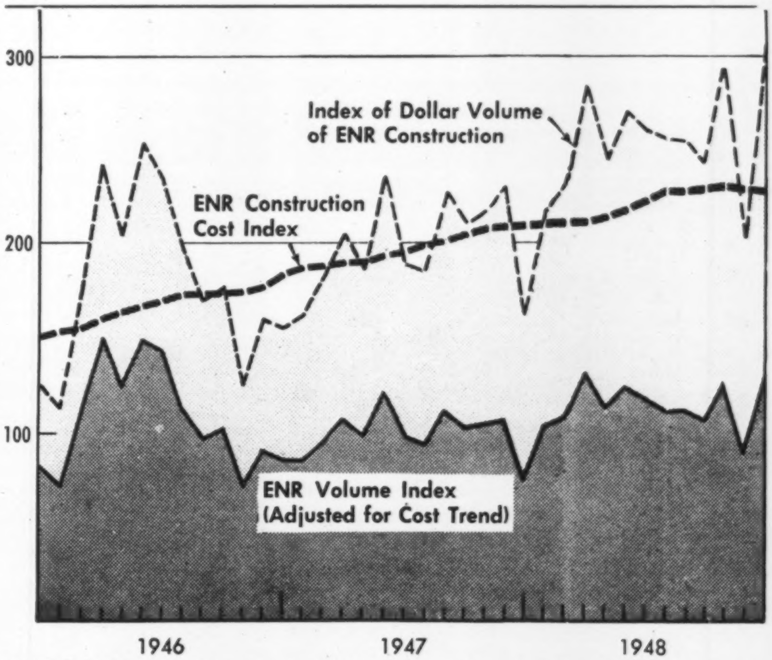
All-time highs were:

Earthwork and drainage, which jumped 56 percent over 1947 to reach $511 million; Bridges, which rose 52 percent to $297 million; waterworks, which jumped 50 percent to reach $208 million, sewers and treatment plants, which rose 29 percent over 1947 to reach $226 million; highways, which moved up to $984 million—a 24 percent jump over $794 million.

Other records were:

The public buildings category showed the biggest percentage increase—87 percent over 1947—to reach $1.147 billion, as compared to $615 million in 1947. Unclassified jumped 24 percent over 1947, to reach $809 million, and industrial buildings were up 26 percent, at $1.087 billion.

Only one category—commercial buildings—showed a decline, and it was still the second highest figure in history. This category showed a total of $1.087 billion, a one percent decline from 1947.



COSTS LEVEL and dollar construction volume hits a peak as 1948 comes to a close. Base figure for the chart is 1926=100.

NSPE to make professional fee study; decries bidding for engineer services

Professional engineers, meeting in Chicago, elect Alan G. Stanford president—Non-voting membership granted engineers-in-training

An overall study of schedules of fees for professional engineering services will be undertaken by the National Society of Professional Engineers, it was announced at the society's recent fourteenth annual convention in Chicago.

The group also went on record, for the first time, as opposing competitive bidding for engineering services, and adopted a new constitution that permits engineers-in-training to hold membership in the society.

Alan G. Stanford, vice-president of Robert & Co., Inc., Atlanta, Ga., was elected president of the NSPE to succeed Alex Van Praag, Jr., Decatur, Ill., consulting engineer.

The fee study, based on suggestions contained in an ENGINEERING NEWS-RECORD editorial (ENR Oct. 14, p. 83) will be sufficiently broad in scope to include the findings and recommendations of other societies and agencies, and will be on a nation-wide basis. Recognizing that a thorough study and report will require from one to three years, the society plans to begin this work at once and pursue it as rapidly as finances will permit. A committee has been formed to make recommendations as to how the final study, which will also include a survey of salaries, may best be made.

Competitive bidding

The society's statement of policy on bidding for professional services points out that competitive bids lose all significance unless based on precise specifications. These cannot be written for the intangible qualities of training, experience, ability and integrity required of the engineering profession. As competition solely on the basis of fees or charges is considered unethical by NSPE and other societies, an owner's announced intent to receive such bids removes from consideration many well-qualified engineers. As an alternative, the group favored negotiation of contracts where the services of more than one engineering consultant or organization are considered.

Engineers-in-training

Recognizing the importance of the younger engineer, the main addition in the newly-adopted constitution is the provision for a non-voting membership for engineers-in-training. Defining such an engineer as one who holds a state certificate of registration as engineer-in-training or who possesses certain minimum education and experience qualifications, the constitution limits such membership to a 10-year period:

The convention expressed concern over possible changes in the Taft-Hartley Act that would deny engineers the professional recognition they now have. To protect this standing it passed a resolution asking that Congress, in any new labor legislation, retain the professional sections of the present law so engineers can avoid regimentation into unions. In his annual report, outgoing President Van Praag stated that all interested in engineering and similar professions must excercise all their resources promptly and forcefully if professional men are to enjoy the freedom and privileges with respect to labor relations to which the present act entitles them.

Profession must sell itself

Two additional state societies—California and Colorado—were chartered and admitted to the national society during the meeting. The NSPE now has a total of 31 member state societies and a membership of over 19,000.

In a session devoted to the broader aspects of the profession, members were told that engineering needs the public as badly as the public needs engineers. Harry Lundin, community relations consultant to the Iron & Steel Institute, called engineering one of the most widely misunderstood and unappreciated professions, and stated that engineers must adopt a broad program of public service. "Until there is adequate proof of the engineer's desire to share the personal problems of people and government, the public's recognition of engineering as a profession will be withheld," he said. As an example of the poor job that the profession has done in selling itself to the public, Mr. Lundin cited a recent poll. In a tabulation of answers to the question, "Which group of people (of eleven choices) has contributed most to your everyday living?", Engineers were tied with government employees for seventh place. However, after the questioner explained just what the engineers had done, all agreed that they had far under-estimated the tremendous contributions that the profession has made to contemporary life.

It is interesting to note that prior to Mr. Lundin's address, the society had already passed a resolution requesting the issuance of a comemorative postal stamp to memorialize the important part played by the engineering profession in the nation's development.

In another address, Arthur Flemming, president of Ohio Wesleyan University, pleaded with the group to take a more active interest in practical politics and government management.

In addition to Pres. Stanford, officers elected include: Russell B. Allen, professor of civil engineering at the University of Maryland, as treasurer; and the following as vice-presidents—William F. Ryan, Boston; John D. Coleman, Dayton; L. L. Dresser, Tulsa; William C. Wagner, University of New Mexico; S. L. Stolte, St. Paul; Cherry Emerson, Georgia Institute of Technology. Paul H. Robbins was reappointed executive director of the society.

TREATED TIMBER for structural uses awaits shipment at the Koppers Co. plant at Charleston, S. C. Creosoted ties, poles and timbers are now shipped in ocean-going vessels from the improved docking facilities.

Define armed forces contracts terms under procurement law amendment

New section of law aimed at uniform procurement practices—Cost-plus-fixed-fee contracts affected—Regulation mandatory Feb. 1

A new section of the Armed Services Procurement Regulation issued Dec. 15, defining costs allowable on cost-plus-fixed-free contracts, adds five major items not previously permissible for construction projects. They are: State income taxes, use and occupancy insurance, ordinary local charity and community benefit donations, charges for depreciation on fully depreciated assets, and "help-wanted" advertising.

In the total volume of construction being prosecuted by the national military establishment today, cost-plus-fee-contracts occupy a minor place. Except for some overseas projects and a few domestic jobs involving special difficulties, military contracts are advertised and awarded on a lump-sum basis. Future contracts will be handled in the same way, unless security and urgency, coupled with lack of detailed plans and specifications, should cause greater use of the fixed-fee form.

Cost-plus-fixed-fee contracts are limited by law to national emergencies and to certain other special circumstances where authority can be obtained to utilize this type of contract.

Jobs underway

Fifteen to eighteen large overseas contracts of the cost-plus-fixed-fee type are now in effect. A half-dozen under the Army engineers are drawing to a close, and the engineers plan to award future contracts in these overseas areas on a lump-sum basis whenever feasible.

Contracts of the Navy's Bureau of Yards and Docks, for projects on remote Pacific islands and in isolated regions of Alaska, however, probably will continue to be negotiated on the cost-plus-fixed-fee formula. It is practically impossible in these places to get either competitive bids or a negotiated fixed-cost contract.

Inside the continental United States, the Navy has perhaps a dozen smaller fixed-fee jobs in progress. These contracts involve unknowns which cannot be estimated. An example is the reactivating of establishments that have been out of service for several years.

Costs allowed

The new regulation, Section 15, is in four parts dealing with types of cost allowed in cost-reimbursable contracts for research and development, supply and material, and construction. Compliance with Section 15 was authorized from the date of issuance, Dec. 15, but it becomes mandatory Feb. 1.

Part 4 details the principles for determining costs under such contracts and sub-contracts for construction or for architect-engineer services related to construction. To be binding, the principles must be set forth or referred to in the contract, or attached to it. They must be made a part of all contracts after Feb. 1.

◆

AGC adds 2 new chapters; total is now up to 105

Two new chapters, in Alaska and New Mexico, have been chartered by the Associated General Contractors of America.

The Alaska Chapter will have headquarters in Anchorage, and the other newly chartered group is the Associated Building Contractors of New Mexico, with offices at Albuquerque.

AGC now has 105 chapters made up of nearly 5,000 firms engaged in all phases of construction.

R. H. Stock, of Stock and Grove, Inc., Anchorage, has been elected president of the new Alaska Chapter, and E. W. Dunn will be manager. Alva J. Coats is manager of the New Mexico group.

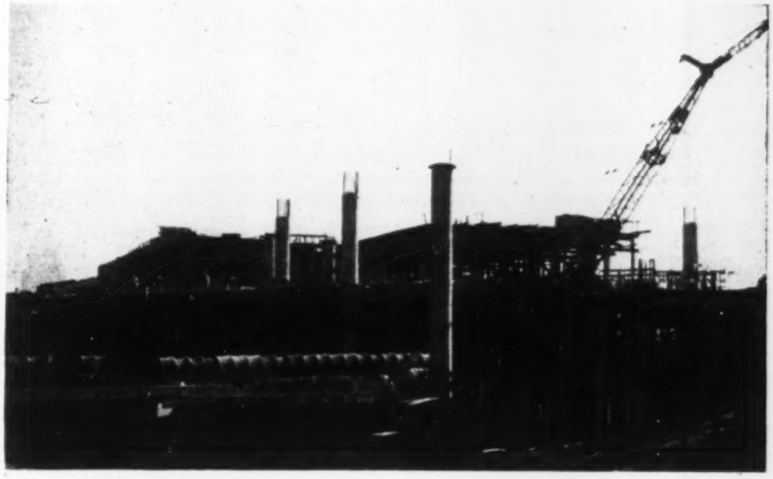
R. E. Dougherty retires as vice-president of N.Y.C.

Richard E. Dougherty, 69, vice-president and assistant to president of the New York Central System, is to retire Dec. 31 after more than 46 years of service. Through an appointment as advisory consultant, Mr. Dougherty's services will remain available to the railroad. He will be succeeded as vice-president by Boynton S. Voorhees.

Mr. Dougherty's career with the New York Central covers a span of years during which he directed many great modern engineering improvements and developments on the railroad, including the Park Avenue and West Side improvements in New York City, the Cleveland Union Terminal, the Buffalo Central Terminal, and many large roadway improvements and bridge construction projects. He has also supervised the Central's real estate holdings in the Grand Central Terminal area. He was appointed vice-president in 1930, and in 1947 vice-president-assistant to president.

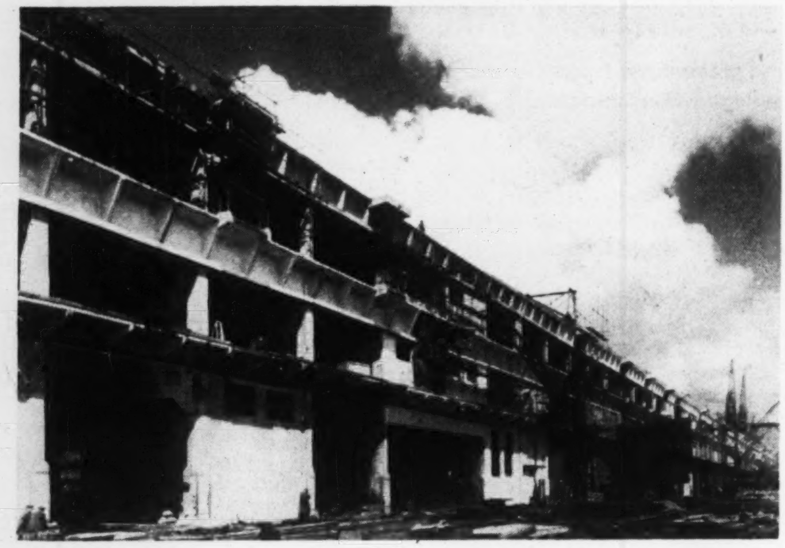
Mr. Dougherty is a civil engineering graduate of Columbia University, where he was briefly an instructor in engineering. He is interested in educational matters and has been president of the Board of Education in White Plains, N. Y., where he resides. During the past year he has served as president of the American Society of Civil Engineers.

Mr. Voorhees, a 1907 graduate of Yale University, joined the Central as a rodman. Recently he has been assistant vice-president.



FOUR-LEVEL GRADE SEPARATION—Work has progressed on the four-level grade separation in Los Angeles, Calif., so that the various roadways are identifiable. This interchange will connect the Arroyo Seco, Hollywood, Harbor, and Santa Ana freeways. The concertina-like object on the second deck is column form covered with tarpaulin to keep it from drying out.

FOREIGN DEVELOPMENTS



BRITISH DOCK REPAIR—Rebuilding the reinforced concrete warehouse of the Gladstone Dock at Liverpool, England, partly destroyed in a bombing raid, is nearing completion. When hit by incendiary bombs the warehouse contained large stocks of rubber and other highly combustible material. The ensuing fire burned for three weeks and was so intense that some brick walls were fused and much of the concrete was damaged beyond repair. In reconstruction, the width of the dockside balconies, designed to facilitate loading by crane and hoist, was increased to 8 ft. at the second floor level and 5 ft. at the third floor. (Cement and Concrete Assn. photo).

Power and irrigation

Australia—The Murray River Valley will become the site of a large irrigation and power project under plans approved by the Australian government. The initial expenditure of $7,000,000 will be shared by the Commonwealth, and the states of Victoria, South Australia and New South Wales. This first cost will be spent on the enlargement of Hume Weir to increase the storage from 1¼ to 2 million acre-feet. It is also planned to install generating plant for an annual power production of 215 million kwh.

Announcing a $20,000,000 plan to develop irrigation areas in northern Victoria, state officials stated that this will involve diversion of an Australian coastal river to inland areas. The headwaters of the Glenelg River will be carried by tunnel through the Black Range at Balmoral to the Wimmera irrigation area.

One of the few major irrigation and water supply projects in Victoria on which work has actually started is the 120,000-acre-ft. Cairn Curran dam on the Loddon River. More than $8,000,000 of construction funds were carried over unspent into 1948-49 because of shortages of manpower, equipment and materials.

The design provides for a dam 2,330 ft. long, 104 ft. high above the river bed and 130 ft. high above foundation, with about 1,000,000 cu. yd. of rolled earth in the structure. River diversion during construction is to be provided by a reinforced concrete culvert, on which work is already in progress. To provide access across the river at the construction site, a 294-ft. tubular-steel truss bridge has been erected in three spans. The bridge is a type developed by the Australian Army during the war.

Java—An irrigation project that is to boost food production on the island by 400,000 tons a year has been announced by the Departments of Immigration and Reconstruction and Energy and Mines, in Batavia. Two areas will benefit from the project: the great plain in northwest Java and the territory around the Kinder Sea.

It will be made possible to raise two crops on an area of 1,040,000 acres which now yield only one crop during the wet west monsoon season, while 85 percent of these acres lie dry during the east monsoon period. The Tjitaroem River, which is already feeding several reservoirs, will be developed to supply three additional storage lakes in northwest Java.

Siam—The Minister of Industry and a representative of the International General Electric Co. of America have signed a contract under which the U. S. company will undertake a survey of the whole kingdom for hydro-electric resources. U. S. hydro-electric engineers will be sent to carry out the work, which is expected to be done partly by air. The survey will be done free of charge for the Siamese government and is expected to be completed within ten months. It will include technical as well as economic aspects.

Under present plans—enlarged following Siam's acceptance as member of the World Bank and subsequent increased opportunities of securing foreign loans—irrigation systems that permit use of part of the water for electricity production, are proposed. It is believed that the first hydro-electric plant will be constructed for central Siam, including Bangkok. A network of irrigation canals will be developed to direct water from the plant's dam to rice fields in the area.

India—A new railroad-highway bridge to aid construction of an irrigation-power project got under way officially last month with the laying of the foundation stone by N. V. Cadgil, minister for works, mines and power.

Estimated to cost $3,000,000, the new crossing of the Mahanadi River will supply a link in the national highway between Bombay and Calcutta and will also permit rail transportation of materials and equipment for building Hirakud dam on the same stream.

The three-mile-long dam is one part of the proposed Hirakud project that involves control of the Mahanadi at three points. The overall project is expected to furnish irrigation to some 1,100,000 acres of land and to develop 350,000 kw. of electric power. Foundation explorations at the site of Hirakud dam are well advanced, and topographic surveys have been completed for 1,000,000 acres of the land involved in the development, according to the Indian Embassy in Washington.

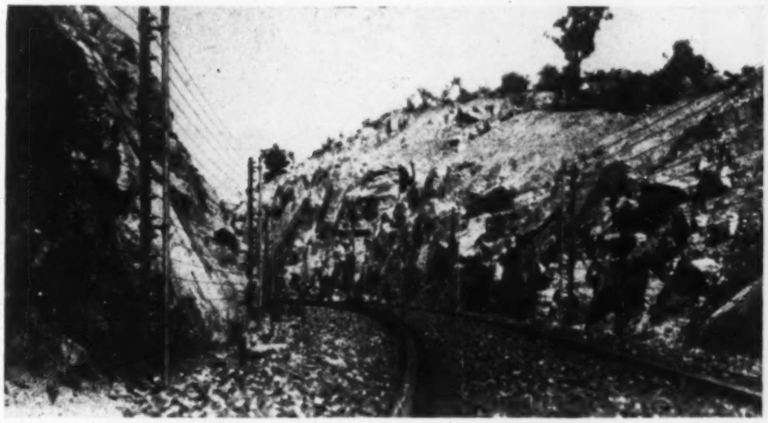
Transport

Brazil—U. S. help in raising more than one billion dollars is needed to improve Brazilian railways. The country's railway experts submitted a plan for such expenditure to an American mission, headed by John Abbink, chairman of the board of the McGraw-Hill International Corp., which is studying Brazil's economy.

Only a few months ago, in presenting a five-year development program to Brazil's Congress, President Dutra estimated the immediate needs for the railways at only slightly above $300,000,-

000. Financing of that scheme was to be internal. In more than tripling the estimate for railways, Brazilian officials suggested that railroads should negotiate private loans in the United States, to be repaid in five to fifteen years through special "bonds" which would not pay interest but would give freight discounts.

This project, along with others, was under study by the Abbink group in November. Although the Abbink mission is not authorized to commit the U. S. to any investments, its findings undoubtedly will influence the American government and private investors.



ROCK SLIDES SET DANGER SIGNALS to protect trains using this cut on the Perth-Northern railroad in Western Australia. The installation is a modification of a protective system developed and used in this country for many years. Lines of energized signal wires are strung through the 1,500-ft. rock cut on both sides to form "fences" 8 ft. 6 in. high. If any wire is broken by falling rocks, protective signals on the approach track are set at danger.

Uruguay—Businessmen's associations supported by private industry have organized in Uruguay and Brazil to promote the building of highways. J. H. Sembower, executive director of the International Road Federation, brought back word of the new organizations upon his return to Washington, D. C., from a recent South American trip.

Both associations launched their activities during his visits to the two countries. In both countries, the organizations have the same purpose—to carry on educational and informational campaigns on the social and economic benefits of good roads. Their objective is to encourage the planning and construction of useful highway transportation systems in their respective countries.

Brazil has set up a central organization that will be supplemented by state and local associations similar to the good roads groups that helped to develop the highway system of the United States. In Uruguay—much smaller in area—the single association will serve the entire nation.

Interest in the same type of good roads associations was strong in Argentina and Venezuela, Mr. Sembower found. There is good possibility that this interest may result in the formation of associations backed by private industries in those countries.

Mexico already has made great strides toward organizing a good roads association, and early formation of an active group may be expected there, according to Robert O. Swain, assistant director of the International Road Federation.

Miscellany

Union of South Africa—Unsightly and apparently useless gold mine dumps that lie to the south of Johannesburg may be put to use in the future. Tests conducted over the past few years have shown that some of the older solidified fills have a loadbearing capacity of 4½ tons per square foot. The dump is at present 68 acres in extent, about ten city blocks.

OLD DUTCH DIKES were made by hand-placing imported granite stones atop clay fill. The trained labor for this highly specialized task was also imported—mostly from Italy. In order to make best use of materials and labor available in Holland. . . .

NEW DIKES ARE PAVED with asphalt by highway maintenance crews. At Harlingen, on the North Sea, a harbor for ocean-going ships is being enlarged by constructing a new dike. Clay fill is covered with sand and then paved with asphalt. (British Combine Photos)

Egypt—The second International Technical Congress, sponsored by the World Engineering Conference, will take place at the invitation of the Egyptian Government in Cairo, March 20-26, 1949.

The first such congress was held in Paris in September, 1946, and was attended by about 1,200 engineers from 30 countries. It was this first congress that gave rise to the permanent organization of the World Engineering Conference. The conference has just recently been granted "consultative status" by UNESCO, the United Nations educational group.

Theme of the second congress in Cairo will be "Raw Materials as an Industrial and Social Problem."

Finland—The Board of Directors of the Export-Import Bank has approved the establishment of a line of credit not to exceed $10,000,000 in favor of the Bank of Finland. The credit is to enable specific Finnish industries engaging in woodworking to procure American equipment and raw materials for the purpose of increasing the exports of wood production, including pulp and paper.

Norway—Merrill Bernard, chief of climatological and hydrologic services, U. S. Weather Bureau, who represented the American Society of Civil Engineers at the Assembly of the International Union of Geodesy and Geophysics at Oslo, was elected president of the Union's Association of Hydrology.

MUNICIPAL AFFAIRS

Fire Depts. and Traffic

No municipal traffic plan is complete or workable unless it gives full consideration to local fire department requirements, says the National Board of Fire Underwriters.

In a recent bulletin the organization says that any new comprehensive traffic or master plan and ordinance should take into account the need for unimpeded response for fire apparatus, and the location of fire stations, both existing and proposed.

The remedies for major difficulties encountered by fire departments because of traffic conditions are:

Proper regulation of traffic so that vehicles will not obstruct the fire apparatus going to or working at a fire.

Prompt notification to the public that apparatus is approaching.

Most traffic experts and city officials declare that parking is the greatest cause of traffic congestion, especially in merchantile and industrial zones. The accompanying evil of double parking not only chokes the flow of traffic but can easily cause serious accidents. This situation was recognized long ago by engineers of the fire insurance industry, and by local fire chiefs who are face to face with this problem daily.

Not only do parked cars handicap the fire department in responding to calls, but such vehicles are also decided obstacles on the fire ground, as they interfere with ladder raising, the locating of apparatus in front of the building on fire, laying hose lines, and access to fire hydrants. Therefore, particular consideration should be given to the prohibition of parking vehicles near and about hotels, large apartments and places of public assembly.

Important street intersections in the vicinity of fire stations should be provided with a warning signal, to be operated by the fire company when it is about to leave quarters; this will be of greatest value when it serves to notify traffic officers at intersections.

Other parking news of the week includes these items:

The Associated Retailers of Indiana have just published a helpful manual on "Parking for Smaller Cities." It is based largely on a recent study by the Public Roads Administration.

Parking is prohibited on many streets in Baltimore, Md.,—on practically all of its downtown thoroughfares. On nonparking streets there are many impounding signs, and offending cars are impartially hauled away and owners must pay $15 to get them back. A similar non-parking plan is being considered at Atlanta, Ga., where the city council's police committee has recommended the banning of parking on ten major thoroughfares in the central business area. Plans have been announced for a 684-car parking lot about four blocks from the center of the business area south of Marietta Street.

Clean-Up Campaigns

More than 2,000 cities and towns conducted Clean Up-Paint Up-Fix Up programs during 1948. In a nationwide contest, Memphis, Tenn., was announced the national winner of the Ernest T. Trigg Trophy by the National Cleanest Town Committee composed of Secretary of the Interior Julius A. Krug, Secretary of Commerce Charles Sawyer, and President Earl O. Shreve of the U. S. Chamber of Commerce. The first prize winners in the various classifications, were: Population over 500,000—Chicago, Ill., and Philadelphia, Pa. (tied); population between 100,000 and 500,000—Memphis, Tenn.; population between 25,000 and 100,000—Butte, Mont.; population between 5,000 and 25,000—Shawnee, Okla.; and population less than 5,000—New Castle, Del. The second place winners were Pittsburgh, Pa.; Louisville, Ky.; Hamtramck, Iron Mountain, Kingsford, and South Haven, Mich.

Canada has also been making efforts along this line. In Montreal promotion urged cooperation with city sanitation authorities in keeping the city clean. The people of Montreal were asked to refrain from littering the streets; were informed of city ordinances and regulations governing clean streets and refuse collection. Special appeals were made to housewives. Because it was well organized and largely citizen-conducted, the clean-up campaign proved highly effective. Other Canadian cities are following Montreal's example.

Tampa Bay Bridge

A proposed Tampa Bay bridge would extend from Maximo Point at the southern tip of St. Petersburg, Fla., to a point near Bradenton on the Manatee County shore, shortening the driving distance between St. Petersburg and Bradenton by 50 miles. It will also complete the Gulf coast highway from Pensacola to the Everglades. At a special referendum election in 1947 voters approved increasing the debt limit of the St. Petersburg Port Authority from $10,000,000 to $15,000,000, and this was done by the state legislature when it became apparent that the lower figure was not enough to finance the bridge. In the near future the authority expects to make another effort to float the bonds to finance this much needed Pinellas-Manatee County bridge.

Of the total length of nearly 12 miles, 9½ miles will be fill. The main steel bridge over the deep water channel will be 2½ miles long.

Plans were prepared about two years ago by Bail, Horton and Associates of Fort Myers and Bradenton, Fla., and Parsons, Brinckerhoff, Hogan and Macdonald of New York City. Their plans call for nine sections of solid fill totaling 49,600 ft., joined by eight open trestle bridges totaling 17,400 ft. Five of the bridges will be spans 250 to 1,400 ft. long and with 16 ft. of clearance to accommodate passage of small craft. The main span across the ship channel will be 600 ft. long with clearance above the water of 150 ft.

Improving Ottawa

Plans for the redevelopment and beautifying of the city of Ottawa, to make it a more worthy capital of Canada are progressing. Jacques Greber, French town-planner, consultant to the federal government, has announced that details of the final plan are almost complete and will be published within the next few weeks.

Meanwhile, F. E. Bronson, chairman of the National Capital Planning Committee, has announced the removal of one of the great obstacles to the replanning of the city. Both Canadian National Railways and the Canadian Pacific Railway, after almost a year's study of the proposed rearrangement of rail tracks in the city, have indicated their full agreement with the plans. Since railway tracks in and around the city are complex in their layout, the rearrangement of the two railways will be at least a ten-year job. First objective of the railroad part of the plan will be removal of an objectionable midcity freight line.

Houston's Express Streets

A system of express streets has been installed at Houston, Tex., by T. E. Willier, city traffic engineer. The system, installed on Dec. 6, includes 65 express streets.

Streets will be designated for the use of trucks and buses; no angle parking will be allowed on any express street; no parking will be allowed at some places; crosswalks for pedestrians will be designated; and other traffic control measures will be set up at designated locations. Mr. Willier said that the system as laid out now may be changed and added to as needed in future.

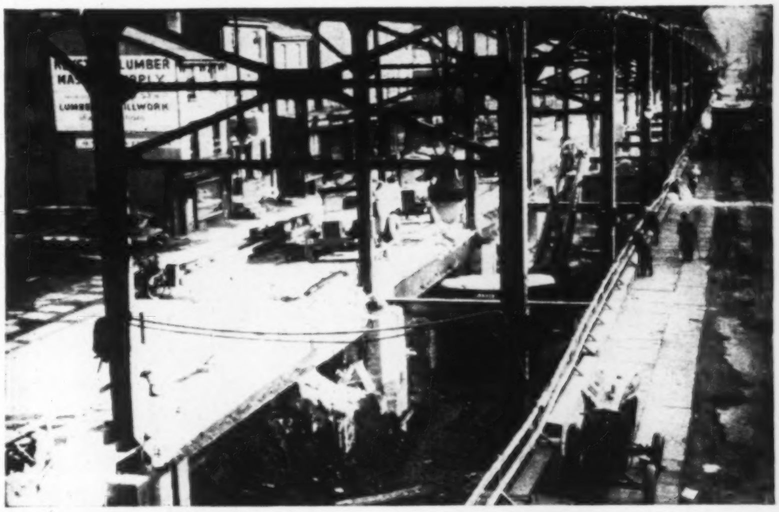
Philadelphia Improvements

The City Planning Commission of Philadelphia, Pa., in its annual report to Mayor Bernard Samuel and the city council recommends a program of public improvements totaling $257,305,800 during the six-year period beginning in 1949. The program includes the construction required to complete the many improvements now under way and to undertake additional projects as rapidly as prudent use of funds permits.

The mayor says that there will be sufficient funds available to pay for the program, and also that the city will provide $145,000,000 in new loans of which $75,000,000 would be specifically for the waterworks and sewerage system.

It is expected that the state will spend $47,500,000 for construction of new highways and rehabilitation of existing. Another $11,800,000 will be available from assessments against property owners for installation of water mains, water meters and sewers. About $1,770,000 will come from federal and state governments for airport construction. In addition, the railroads are expected to spend upwards of $20,000,000 on joint city-railroad projects. Another $50,000,000 will be available from unexpended balances of authorized municipal loans.

Heading the list of projects are those for waterworks and sewerage additions and improvements, airport additions, flood control work, subway extension, additional recreational facilities and public housing and redevelopment. Edward Hopkinson, Jr., head of Drexel & Co., is chairman of the Planning Commission.



PHILADELPHIA SUBWAY—The view is of the Market street subway work looking west from 34th street. It shows the concrete piers supporting the elevated railroad tracks. Project is the start of a program that will continue the subway through a tunnel already built under the Schuylkill River to 40th street and eventually to 63rd street, and into Delaware County. While the subway is being constructed the Market street elevated section must operate uninterruptedly, so Lawrence Costello, Department of Transit Director, and other staff engineers got together with the engineers of the contractors and devised an engineering setup that would allow the subway to be built while not interfering with the normal operation of the elevated high speed line. The cost of the whole project is expected to run over $40,000,000.

Municipal Briefs

Mayor Frank J. Costello of Syracuse, N. Y., believes the city will spend about $1,800,000 in 1949 on capital improvements. In addition, the state will pay about $500,000 for the widening and paving of Erie Boulevard on the route of the old Erie Canal through the city from east to west.

On Jan. 6 the city council of Boston, Mass., will hold a hearing on the smoke nuisance from the Boston & Albany R. R. yards in the Allston district.

A finance subcommittee of the sanitation section of the regional planning commission of Cleveland, Ohio, has recommended that residents should pay a sewer rental charge to help finance sewer construction, and that property sub-dividers should be required to pay for sewers and other improvements in their allotments.

On a dollar valuation basis, the $13,607,390 of new construction of buildings in Albuquerque, N. M., in 1948 showed an increase of well over 50 percent as compared with any previous year. The city commissioners have authorized $2,910,000 of revenue bonds for water and sewer extensions.

Voters of Dallas, Tex., have approved a $22,400,000 bond issue to finance municipal improvements, including $2,400,000 for storm sewers; $4,200,000 for street paving; $1,300,000 for street widening and opening; $9,000,000 for water expansion; and $5,500,000 for sanitary sewers.

Raymond Concrete Pile Co. engineers recently started test borings of soil on the site of the garage to be constructed under the Common in Boston, Mass. Samples will be analyzed at Massachusetts Institute of Technology and Harvard University to determine what engineers will encounter next spring when construction starts.

Public Administration Clearing House reports that city voters are getting hestitant about approving municipal bonds. At the recent general elections, they rejected 49 per cent of the bond proposals offered on local ballots, whereas a year ago, general election voters approved 95 per cent of all municipal bonds proposed.

Phoenix, Ariz., is nearing the completion of a $6,000,000 water development program approved in a 1946 bond election. R. Gail Baker, city engineer, reports only two projects totaling $1,000,000 remain to be completed. These are the $800,000 installation of floodgates at Horseshoe Dam on the Verde River to increase city water storage, and construction of a $200,000 booster pump station.

The City Building Commission of Indianapolis, Ind., will soon demolish hundreds of condemned buildings. For the first time in 10 years, old buildings, many of them dangerous firetraps, will be torn down on a large scale. A new ordinance is being drawn up to assist the building commissioner in his campaign to rid the city of unsightly and dangerous buildings.

After a study of the proposed Erie County Water Authority, Public Works Commissioner E. G. Speyer of Buffalo, N. Y., has come to the conclusion that the city cannot sell additional water to other communities in the county without increasing the capacity of its pumping station and filtration plant.

MEN AND JOBS

W. Scott Johnson, chief engineer and director of the section on environmental sanitation, Missouri Division of Health, upon the completion of 25 years of service in public health work has been honored by the Missouri Section American Water Works Association and the Missouri Water and Sewerage Conference. He started with the section as assistant engineer in 1923 and in 1925 became chief engineer of environmental sanitation.

M. J. Barrick, district engineer of the Williamsport office of the bureau of engineering, Pennsylvania Department of Health, has transferred to the Harrisburg headquarters to become office engineer.

H. J. Brunnier, San Francisco structural engineer, recently left for Japan to investigate effects of the Fukuii earthquake. He will participate in meetings in Tokyo to assemble and analyze investigations made by Japanese agencies into earthquake damage on structures in the area. He made the trip with Army cooperation at the request of the American Association of Seismology.

Lester A. Trier, Fort Wayne, Ind., has been appointed chief engineer for the Elkhart Bridge & Iron Co., Elkhart, Ind. He has been a detail engineer for the Fort Wayne Structural Steel Co. for the last two and a half years. He is a graduate of Indiana Technical College, 1938, with a B.S. degree in civil engineering. He saw five years of Army service and was released with the rank of major.

The Pennsylvania Highways Department has announced appointment of **McClay Gibson,** of Carlisle, as resident engineer for the Harrisburg District (No. 8) of the state highway system.

Frank C. Askwith, city commissioner of works, Ottawa, Ont., has retired. He joined the works department staff in 1907 and during succeeding years served as chief draftsmen and assistant engineer. He was assistant works commissioner from 1916 to 1931, having been appointed commissioner in the latter year. Assistant Works Commissioner Cecil Wight is to be acting commissioner.

Norman D. Kenney has joined the staff of G. Douglas Andrews Associates, engineering consultants, 212 Washington Ave., Towson, Md.

W. B. Jennings newly appointed city engineer for Garden City, Kan., served for 18 years as a resident engineer for the Kansas State Highway Department.

J. S. Pilkington, county engineer, Randolph County, Ala., has resigned to become county engineer of St. Clair County, Ala., with offices at Ashville.

Attending the recent semi-annual meeting of the governing and advisory boards of the Associated General Contractors of America were these members of the Heavy Construction and Railroad Contractors division: S. L. Fuller, chairman; A. S. Horner, vice-chairman; A. G. C. Managing Director H. E. Foreman; vice president A. Teichert, Jr., and Brig. Gen. P. A. Feringa, Assistant Chief of Engineers for Civil Works, U. S. Army, who was a speaker.

At the recent 100th meeting of the advisory board of the Joint Highway Research Project, a cooperative research endeavor sponsored by the State Highway Commission of Indiana and conducted by Purdue University, the above group was present. They are, bottom row, left to right: A. O. Hastings, superintendent of maintenance; C. E. Vogelgesang, chief engineer; H. D. Hartman, member of State Highway Commission; N. F. Schafer, member of Commission; President, F. L. Hovde. Second row: J. T. Hallett, engineer of roads; J. R. Cooper, engineer of bridges; R. G. Sturm, professor of engineering mechanics; E. B. Wiley, head, School of Civil Engineering and Engineering Mechanics. Third row: P. D. Miesenhelder, engineer of tests; K. B. Woods, associate director, Joint Highway Research Project; R. E. Fadum, professor of soil mechanics.

Christian G. Norman, chairman of the board of governors of the New York Building Trades Employers' Association, will retire Dec. 31. He has been chairman for the last 28 years. Mr. Norman was one of the founders of the association in 1903.

John H. Wilson, the 76-year-old engineer-mayor of Honolulu, has been reelected for another 2-year term. He will push for a traffic tunnel through the Koolau mountains. The $10,000,000 project, if built, would alleviate traffic on the Pali road, construction of which, in 1898, brought Mayor Wilson his first island engineering fame. (ENR, Aug. 26, p. 10) He says he will retire at the end of his new term.

Thomas E. Gilhooley, formerly assistant superintendent of the Columbia District of the Atlantic Coast Line Railroad, has been named superintendent of the district, with headquarters at Florence, S. C. He succeeds R. B. Hare, who retired Oct. 31 after having been with the Coast Line and predecessor companies for 59 years. Gilhooley obtained his engineering degrees from the Virginia Polytechnic Institute and entered the railroad field with the C. and O. Railway. He became affiliated with the Atlantic Coast Line at Wilmington in 1947.

William E. Lawson, Jr., city engineer at Waynesboro, Va., since 1947, is to be city manager of the city of South Boston, Va.

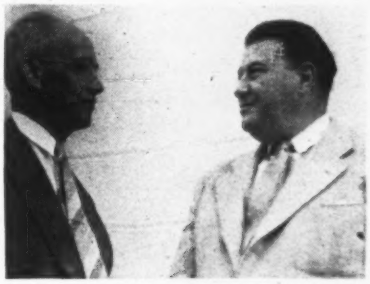
The retirement of **George H. Canfield,** Portland, Ore., who has served for the last 20 years as district engineer of surface-water investigations in Oregon for the U. S. Geological Survey, has been announced. He will be succeeded by **Kenneth N. Phillips** who has had 28 years' service with the Geological Survey, mostly in Oregon, with details to Washington, D. C., and Alaska. Mr. Phillips was graduated from Oregon State College in 1921.

J. B. Kelly, Jr., has joined the Mellon-Stuart Co., Pittsburgh, Pa., construction engineers, as vice-president in charge of construction, has been in Pittsburgh's construction field for 12 years.

George F. Nicholson, consulting engineer, has moved his offices to the Kress Building at 122 W. 5th St., Long Beach, Calif., from Los Angeles. He specializes in harbor and waterfront engineering design and construction and beach preservation.

John B. Wilbur, head of the department of civil and sanitary engineering, Massachusetts Institute of Technology, has become associated with Fay, Spofford & Thorndike, Engineers, Boston, Mass., as consultant, particularly on complex structural engineering problems.

Joseph F. Baigas, Jr., a sanitary engineer with a 1947 B.C.E. from Manhattan College has joined the New England field group of the National Council for Stream Improvement. Prior to joining this paper-industries group he was associated with the New York City Department of Public Works in connection with its harbor pollution survey.



E. W. Ewig (right), consulting engineer, Wm. S. Lozier, Inc., Rochester, N. Y., discusses problems at the Brighton, N. Y. sewage-treatment plant with George Bush, superintendent.

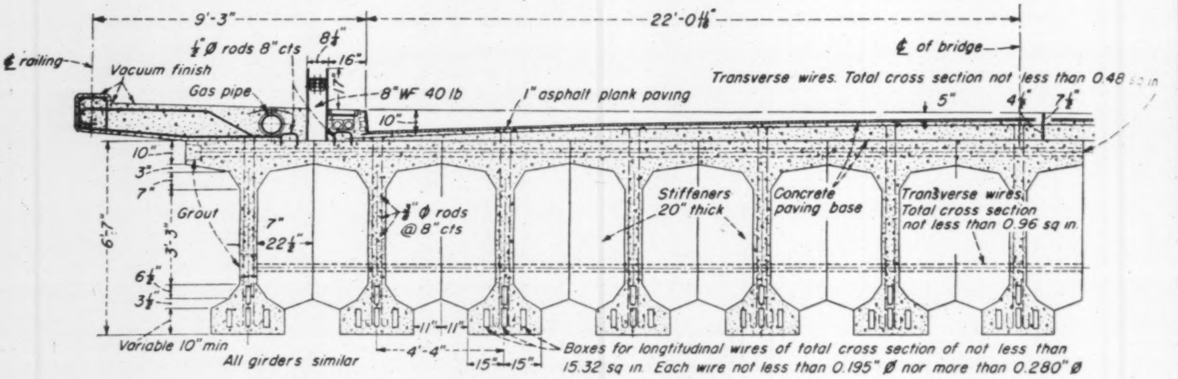
New president of the Federation of Sewage Works Associations is V. M. Ehlers, chief sanitary engineer, State Board of Health, Austin, Tex. Mr. Ehlers succeeds George F. Russell, consulting engineer of St. Louis, Mo.

Thomas William Spillman, a recent civil engineering graduate at Duke University, Durham, N. C., has become associated with the Bethlehem Steel Corporation's fabricated steel construction plant at Pittsburgh, Pa.

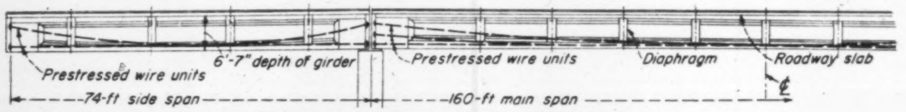
Ben G. Threlkel, who has served the Louisville, Ky., district of the U. S. Corps of Engineers for almost 50 years, has retired. On Oct. 27 he was given a farewell banquet by his friends and associates.

J. N. Smith, former West Virginia Road Commission engineer, has been appointed District Two engineer with headquarters in Huntington. He succeeds Charles H. Boggs, transferred to the construction division.

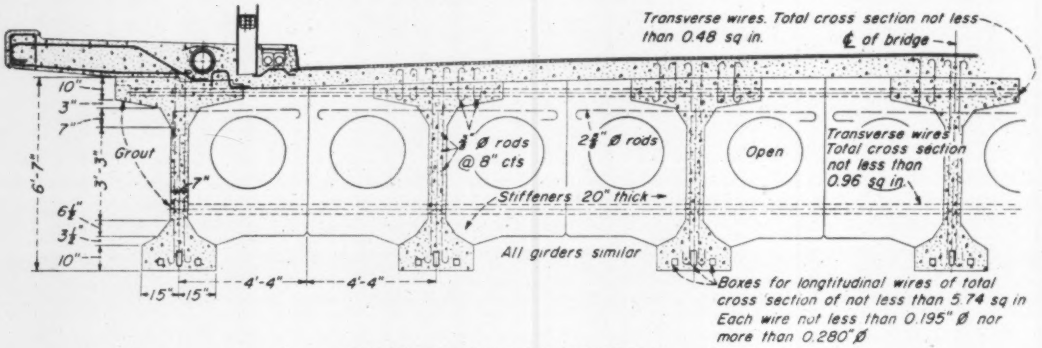
Consulting engineer for the N. Y. Board of Water Supply, Frank Marston of Metcalf and Eddy, Boston, Mass., watches the discharge from Indian Brook Siphon before a recent inspection of the Catskill Aqueduct.


9'-3"
22'-0⅛"
½" Ø rods 8" cts
8¼"
16"
℄ railing
Vacuum finish
Gas pipe
8" WF 40 lb
1" asphalt plank paving
℄ of bridge
Transverse wires. Total cross section not less than 0.48 sq in
5"
4½"
7½"
10"
10"
3"
7"
Grout
7"
22½"
6'-7"
3'-3"
6½"
3½"
⅜" Ø rods @ 8" cts
Stiffeners 20" thick
Concrete paving base
Transverse wires. Total cross section not less than 0.96 sq in.
Variable 10" min
All girders similar
4'-4"
11"
11"
15"
15"
Boxes for longitudinal wires of total cross section of not less than 15.32 sq in. Each wire not less than 0.195" Ø nor more than 0.280" Ø

CROSS SECTION MAIN SPAN


Prestressed wire units
6'-7" depth of girder
Prestressed wire units
Diaphragm
Roadway slab
74-ft side span
160-ft main span
℄

SCHEMATIC DIAGRAM OF GIRDER REINFORCING


Transverse wires. Total cross section not less than 0.48 sq in.
℄ of bridge
10"
3"
7"
Grout
7"
6'-7"
3'-3"
6½"
3½"
10"
⅜" Ø rods @ 8" cts
2⅜" Ø rods
Open
Transverse wires. Total cross section not less than 0.96 sq in.
Stiffeners 20" thick
All girders similar
15"
15"
4'-4"
4'-4"
Boxes for longitudinal wires of total cross section of not less than 5.74 sq in. Each wire not less than 0.195" Ø nor more than 0.280" Ø

CROSS SECTION APPROACH SPAN

Precast concrete girders up to 160 ft. long, weighing nearly a ton per ft. and incorporating high strength steel wires grouped in reinforcing units, will comprise the superstructure of the . . .

First prestressed bridge in the U. S.

E. R. Schofield
Principal Assistant Engineer, Bureau of Engineering, Surveys and Zoning Philadelphia, Pa.

The city of Philadelphia is receiving bids until January 19 for a prestressed reinforced concrete bridge which, when constructed, will be the first of its type on this continent.

Located in Fairmount Park it will carry Walnut Lane across the Paper Mill Creek Valley. Only a half mile distant stands the first major concrete arch bridge built in the United States, also carrying Walnut Lane across a valley, the Wissahickon. This well-known concrete arch dates back to 1906.

The new prestressed bridge, of deck girder type, will have a center span of 160 ft., two end spans of 74 ft., and will be about 64 ft. wide. Designed for an H-20-44 live load, plus 17 per cent impact, it will carry a 44-ft. roadway with asphalt plank wearing surface.

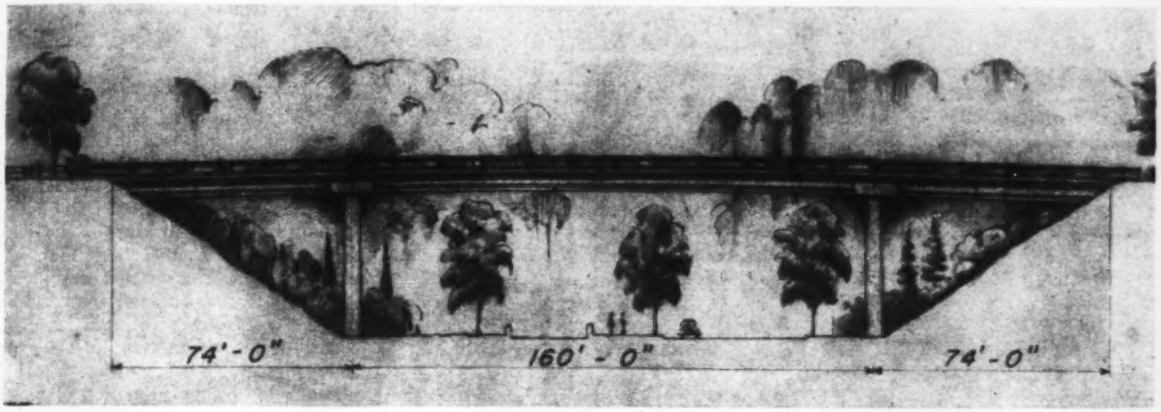
Design working stresses were 2,000 psi for the concrete and 126,000 psi for the steel, requiring concrete of 5400-psi 28-day strength and steel with an ultimate strength of 210,000 psi. That the bridge is a major structure as well as a unique one is emphasized by the fact that each of the fourteen main span girders will weigh 150 tons.

History of the project

Before the city decided to embark on this pioneer undertaking, the bridge project had already developed a considerable history. It first came into prominence in 1931 when the Philadelphia Art Jury approved plans for a 150-ft.-span, solid-spandrel, stone-faced arch, which was bid but never built because of the depression. (Art Jury approval is required for all structures built with city funds, and in the case of this bridge the additional approval of the Fairmount Park Commission had to be obtained).

Last year the project was revived when the Art Jury again approved plans, this time for a 150-ft.-span open-spandrel, stone-faced-arch. This, too, was bid, but again not built, since the cost that was involved was considered excessive.

One of the reasons for the high cost was the expensive foundation required to carry the thrust from the arch down to rock, which was about 35 ft. below ground level. This cost could be re-



ARTIST'S SKETCH of first U. S. prestressed concrete bridge planned to be built in Fairmount Park, Philadelphia.

duced by a type of bridge having vertical reactions, as in a girder or rigid frame, but although many sketches were made of these types, in both concrete and steel, none proved acceptable to the Art Jury architect.

About this time the writer made the acquaintance of L. Coff, consulting engineer for the John A. Roebling's Sons Co. and Prof. Gustave Magnel of Ghent University, Belgium, who impressed upon him the importance accorded prestressed bridges in Europe. Also at this time the city of Philadelphia was acquiring first hand knowledge of the design and construction of prestressed concrete in sludge digestion tanks which were being built at its Northeast sewage treatment works. These tanks were 8 in number, 110 ft. in diameter, 32 ft. high and the shells were 6 in. thick at the top and 14 in. thick at the bottom. They were made of poured in place concrete and wound with high-tensile wire stressed to 140,000 psi, 80 miles of wire being required for each tank. The use of a design of this type saved the city of Philadelphia about $200,000 over an alternate conventional concrete design.

As a consequence of these two influences the writer became convinced that American engineers should profit from the example of the economy-minded Europeans. Since we now are faced with shortages of cement and steel, we can no longer afford to be wasteful, but must make the materials we use work harder. This reasoning suggested that prestressing might be the solution to the problem of the Walnut Lane Bridge.

Roy Larson, architect for the Art Jury, was very sympathetic to the idea of Philadelphia being the first in this country to use prestressed concrete in a bridge, and he actively assisted in the preparation of a design that would not only harmonize with the beauty of the valley, but at the same time would be more economical than any so far accepted.

Strengths and stresses

The unusual feature of this prestressed bridge design is the high stresses to which the steel wires and the concrete are subjected. For the wires, the maximum working stress will be about 125,000 psi, with an ultimate working load of about 15 percent less due to creep of steel and plastic flow and shrinkage of concrete. The wires are high carbon steel with an ultimate strength of 210,000 psi and a yield point of 160,000 psi.

The concrete, to be proportioned for a 28-day strength of 5400 psi, will be prestressed to a maximum compressive stress of 2000 psi, which will reduce to about 1800 psi. Assuming that a 30 per cent increase over the 28-day concrete strength will occur before the bridge is placed in service, the factor of safety will be about four.

Insofar as the high strength requirements of prestressed concrete are concerned, the writer knew that Karl Billner of the Vacuum Products Co. had produced concrete in his laboratory having a compressive strength of 16,800 psi., and that job concrete with 28-day strengths up to 9000 psi had been obtained in the precast floor slabs of the Parkway Village development built by the Geo. A. Fuller Co. in New York City. The writer reasoned that if we are able to produce these high-strengths we should attempt to use them in our designs.

Large and heavy girders

All of the girders in the bridge will be 6 ft. 7 in. deep and T-shaped with a bottom flange. They will be 52 in. wide across the top flange and 30 in. across the bottom flange. In the center span the sides of the tops of the girders will be in contact with each other, and fourteen girders will be required to provide the necessary deck width. In the side spans alternate girders will be omitted, and a cast-in-place deck poured across the top.

All girders will be precast to one side of the bridge location and lifted into position. A major rigging job will be required since each main girder will weigh about 150 tons and must be set 50 ft. above the floor of the valley.

The prestressed reinforcing will consist of single wires 0.195 to 0.280 in. in diam., and in sufficient numbers to give the required sections. The wires will be grouped in rectangular steel boxes about 2x6 in. in size, running the entire length of the girders, four in each main span girder and three in each side span girder. All boxes will be located in the bottom flange at the center of spans, but only two of the boxes will remain in this location for the full length of the girder. Two of the boxes in the main-span girders and one box in the side span girders will rise from the bottom flange as they approach the ends of the girders.

After the concrete has attained its 28-day strength the wires will be stressed in pairs to a predetermined value, which will place a compression of about 2,000 psi in the lower flange and about 1000 psi in the upper flange. The wires will then be locked in this position by means of wedges, and grout forced under pressure into the boxes so that all wires will be sealed in.

Completion of the prestressing will be followed by erection of the girders. After they are all in place on the piers, they will be pulled together by transverse wires, which will be stressed similarly to those used for the longitudinal stressing. The transverse prestress forces will be transmitted through diaphragms placed at right angles to the longitudinal axis of the girders and about 16 ft. apart. In addition to these transverse diaphragms, the transverse prestress in the center span will be transmitted through the top flanges of the girders, which abut each other. Deck concrete will be poured in place and will not be prestressed.

The amount of transverse prestressing will be determined by the transverse bending moment or the transverse shear whichever is the greater. The end blocks holding the transverse prestressing wires will be set in pockets in the outside face of the exterior girders. These pockets will be filled in with grout after the transverse prestressing has been completed so that they will be as inconspicuous as possible.

The work of constructing this bridge will be done under the direction of A. Zane Hoffman, chief engineer, Bureau of Engineering, Surveys and Zoning and Thomas Buckley, director, Department of Public Works of the City of Philadelphia.

RANDOM LINES . . .

R. F. Legget of the National Research Council of Canada, who has been a correspondent for *Engineering News-Record* for many years, attended the recent meeting of the International Union of Geodesy and Geophysics in Norway. We here pass on some of his interesting comment concerning the meeting and his trip.—Editors

Symphony orchestras and scientific societies are not usually associated, but the recent meeting of the International Union of Geodesy and Geophysics, held in Oslo, Norway, was actually opened by the playing of the Oslo Philharmonic Orchestra!

The union is a federation of international associations dealing with geodesy, vulcanology, terrestrial magnetism, oceanography, seismology, meterology and hydrology. Its scientific character is carefully guarded, application of the sciences in question being left for the consideration of other bodies.

The writer was principally concerned with the proceedings of the International Association of Hydrology, which come closest, perhaps, to engineering practice of all the sectional meetings that were held.

Incidentally, Merrill Bernard of the U. S Weather Service, Washington, was elected president of this association for the coming three years. Its work is to be divided between three commissions, one on surface waters, one on groundwater and one on snow and ice.

New ice problems

It was brought out in two papers at the opening session that in Norway and Sweden considerable trouble is being encountered with river ice problems, due to the increase in the use of regulated river flow in water power plants. Increased water power development in Sweden during the recent war years intensified the trouble.

River ice is used as a major means of travel during winter months in the interiors of both countries. Variation of water levels resulting from frequent draw-downs cause breaking of the ice near the shore with the result that, in some places, temporary bridges have to be built to connect land roads with those on the frozen river surfaces.

Frazil ice is giving trouble in some places, and even local weather is said to be affected by the formation of mist over open water previously frozen during winter months.

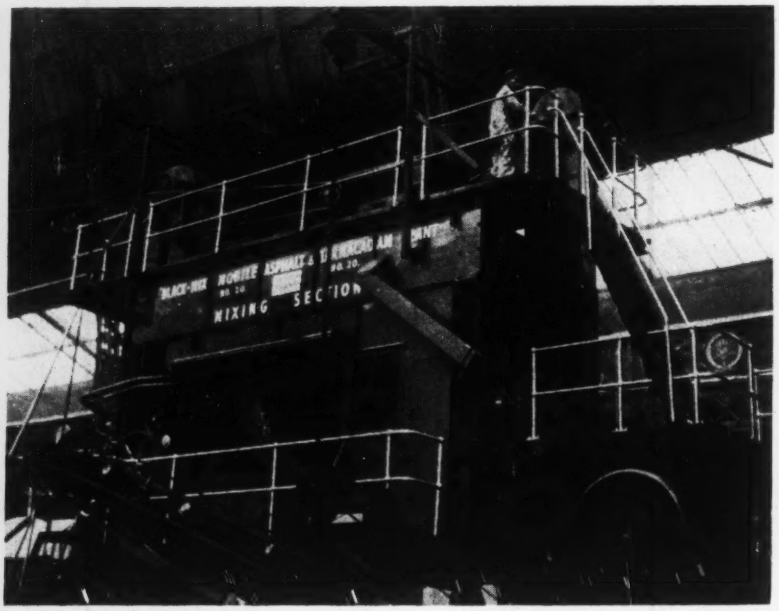
This emphasis upon ice problems was reflected in the proceedings of the Commission on Snow and Ice of the hydrology association. Formed originally by the amalgamation of committees on glacier flow and snow surveying, the commission at this meeting changed its name from that on Snow and Glaciers to the more general form, indicative of its broadening interests.

Over forty papers were presented from thirteen different countries on various aspects of snow, ice, and glacier research, the nature and variety of the papers showing clearly the great importance and scientific interest in the study of water in its frozen form. Of unusual significance was the emphasis placed upon the proper classification of snow. A small committee was appointed to consider this matter and to report at the next meeting, three years hence.

Canadian snow studies

Papers of unusual interest were presented on the physics of the formation of an ice sheet, on the heat balance in snow cover, and on the survey being conducted of snow conditions across the Dominion of Canada.

This survey, now being started for the third successive winter, consists of a complete investigation of all the main physical properties (such as grain size, temperature, free water content, specific gravity and hardness) of all the layers in the snow cover at twelve carefully selected locations. The results thus being obtained will form the basis for fundamental snow studies now being planned in Canada. Somewhat similar studies are already in progress in Switzerland and are also being initiated as a part of the program of the cooperative snow studies being conducted in the three joint western laboratories of the U. S. Weather Bureau and the U. S. Corps of Engineers, which were described to the meeting.



MOBILE MACADAM AND ASPHALT PLANT—This mobile plant turns out 20 to 25 long tons of road material per hour and is operated by one man at a control panel. It was the largest machine on display at the recent Public Health and Municipal Engineering Congress and Exhibition in London, England.

Snow clearing methods followed by Scandinavian road and rail systems do not appear to differ markedly from those in North America. Great emphasis is placed on the efficient and regular use of V-plows on railways, the area cleared being commonly widened by the use of an ingenious scraper device, pulled along the track after the plow. This scrapes snow from the sides of the cut to within the rails, whence it is removed by use of a standard rotary plow.

Snow clearing problems on the Oslo-Bergen railway are almost proverbial but the line is rarely closed. In Sweden, strangely enough, the worst snow problems are met with at the extreme southern tip of the country and not in the north.

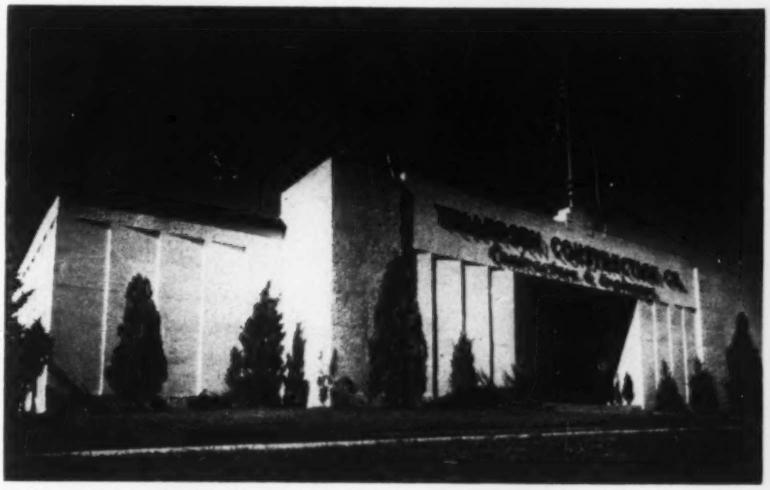
Skillful concrete work

Construction work in Scandinavia as seen during some rather hurried travel following the Oslo meeting appears to be affected to some degree by the current economic difficulties of the several countries, steel being notably scarce. Reinforced concrete is seen in use in ways never witnessed in North America, the quality of workmanship being unusually high. Even such structures as transmission-line towers may be seen built of slender reinforced-concrete sections.

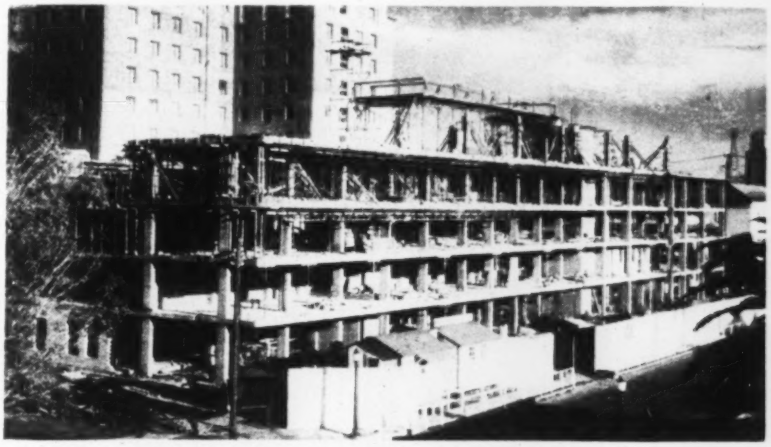
One contributing factor to this fine concrete work is the educational activity of the Swedish Cement and Concrete Research Institute at Stockholm. Supported by the cement and concrete industry, this well-known research center regularly conducts schools for concrete inspectors and junior engineers.

Norwegian dams

An unusually interesting indication of this good concrete practice is the Norwegian trend in dam building. Almost all major dams in this rugged country are now being built as reinforced-concrete structures, either of the buttress or arched types, using concrete of unusually high quality, placed under constant and expert supervision. A thin diaphragm wall is usually constructed downstream of the dam membrane, thus trapping air in the intervening space, the temperature of which is kept above freezing point by the heat in the water of the reservoir. Such insulation is giving most satisfactory service.



COMFORT, QUIET AND PRIVACY were prime factors in design of the Tellepsen Construction Co. office building in Houston, Tex. Exterior concrete walls of the structure are formed into a vertical saw tooth finish, which makes an attractive surface and will also hide any expansion cracks. Another novel exterior treatment was attained by painting wood forms with a thick coat of molasses, which pulled away some concrete leaving a rough surface.



ARIZONA HOTEL ADDITION—Del E. Webb Construction Co. is building this 150-room, $1,000,000 addition to the Hotel Westward Ho in Phoenix. The four-story structure is reinforced concrete frame with concrete floors.

The prevalence of brick as a construction material, especially for housing developments, is everywhere to be noted. The use of light-weight concrete blocks seems to be gaining in favor while a more recent development is the use of "wood-wool" slabs (with cement as a binder) for wall construction, placed within reinforced-concrete frames.

The use of locally produced building materials is always much in evidence, as is also the careful use of timber, resulting in such features as the very frequent occurence of wooden houses and buildings with heavy clay-tile roofs. The turf roofs which are such an attraction for tourists may still occasionally be seen under construction; it was interesting to note that nothing seems yet to have replaced birch-bark as the waterproof base for this ancient type of roof construction.

A new survey peg

From the many unusual details observed, one may perhaps usefully be mentioned. Swedish engineers appear to have solved the "survey peg problem." An ingenious device is now being introduced to the Swedish market consisting of a special metal drive-head which can be coupled to a piece of standard pipe for driving to any desired depth. The head has three curved holes in it through which three stiff wires are driven after the head has been sunk to the required depth. The holes deflect the wires so that they form a three-pointed "prong" buried beneath the head.

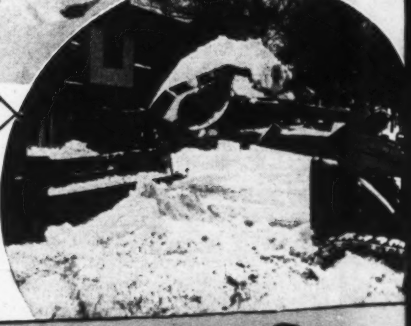
By variations of depth and wire length, any reasonable resistance to movement can be obtained. But, as was ruefully admitted, even this special type of survey stake will not resist the action of a large bulldozer when driven by a determined operator!

⇧ NOW IT'S A SNOWPLOW

Plenty of traction and power combined with greater maneuverability make it the ideal outfit for plowing snow from narrow roads, streets, alleys, parking lots, many other places.

NOW A SNOW LOADER ⇨

Quickly picks up and loads snow into trucks from wherever snow has to be removed — industrial plants, cemeteries, airports, institutions, streets, alleys, parking lots, gasoline stations.



For All Types of Jobs

Interchangeable Attachments Make The **ALLIS-CHALMERS HD-5*** and **TRACTO-SHOVEL** *A Versatile, Money-Saving, All Season Producer*

The **ATTACHMENTS**

- 1 Cu. Yd. Standard Bucket.
- ¾ Cu. Yd. Narrow Bucket.
- 2 Cu. Yd. Snow Loader Bucket.
- 1 Cu. Yd. Rock Bucket.
- Teeth For All Buckets.
- Heavy-duty Bulldozer Blades — narrow and wide.
- V-type Snowplow.

***HD-5 weighs 11,250 lbs. . . . provides 40.26 drawbar hp., 50.25 on belt**

NOW IT'S A SHOVEL

Digs basements, loads surplus material into trucks from roads and streets, loads from stockpiles — sand, gravel, crushed rock, etc. . . . for all kinds of excavating and fill work, numerous loading jobs and crane work.

NOW A BULLDOZER

Equipped with a heavy-duty blade, backed by ample traction and power, has the ability to excavate in tough going, backfill, handle all kinds of leveling work.

the Year 'Round

Here's an outfit that brings you an income throughout the year. No need to put it away in the winter and wait for spring. When the dirt and material handling season ends you simply take off the bucket or bulldozer and quickly attach a snowplow or snow bucket—depending on the job to be done.

In every community, large or small, and in the country, there are countless snow removal jobs just made to order for this outfit.

Get all the facts from your Allis-Chalmers dealer . . . start earning a year around income NOW!

Not Tied Down To Specialized Duty—Yet Gives Special Performance On Every Job

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

NEW PRODUCTS

Walking Dragline

Production operations are under way in the recently-acquired Marion Power Shovel Co. branch plant in Cambridge, Ohio. The first completed machine, a MARION Type 7200 walking dragline, was shipped from the Cambridge plant recently. It is expected that two machines of this type will be manufactured each month until next spring or early summer, when production is scheduled to start on the MARION Type 7400 walking dragline. The MARION Type 7200 has a bucket capacity varying from 5 to 7 cu. yd. depending on the length of the boom. The Type 7400 is an 8 to 12-cu. yd. machine, with the capacity dependent on the boom length. Heretofore, both the Type 7200 and Type 7400 walkers have been manufactured in the plant of a sub-contractor. The Type 7400 will continue to be built by the sub-contractor until production facilities at Cambridge have been sufficiently expanded to permit manufacture of both the 7200 and 7400 at that factory.—MARION POWER SHOVEL CO., MARION, OHIO.

Rotary Concrete Drill

An improved rotary concrete drill with design features that make possible a substantial cost-per-hole saving has been announced. Because of its core drill design and a side exhaust slot which permits core particles to escape, the Tilden drill penetrates concrete at the rate of 2 in. or more per minute in diameters of from ¼ to 2 in. Specially-treated sintered carbide cutters, located around the perimeter of the core, where they operate at the most efficient speed, exert a quiet, pulverizing action which drills holes fast and leaves them straight and clean. By reducing labor time per hole the drill effects an important saving in electrical work, plumbing, heating, air conditioning, sign hanging and many kinds of maintenance and installation work. Glass, steel and rock, when imbedded in concrete, are easily drilled. The cutters can be resharpened on any ordinary grinder used for tungsten carbide. Tilden drills are available in all sizes from ¼-in. to 2¼-in. Core drills for taking samples and drilling through walls, brick or concrete, in sizes of from 2 in. to 6 in. and up to 4 ft. lengths can be furnished on special request.—TILDEN TOOL MFG. CO., 1995 NO. FAIR OAKS AVE., PASADENA 3, CALIF.

Anti-Rust Protection

Salt used by many cities for ice and snow removal is said to have corrosive effects on automobile fenders and the under-bodies of cars, and it is said that untreated salt lodged in fender and body joints and in joints or crevices of bridges, etc., will continue to corrode the metal each time the salt gets wet. Researchers have learned that when Banox is mixed with the salt, and the slush thus treated is splashed onto metal surfaces, a microscopically thin but protective film is formed over both rusted and clean metal. The chemical is said to be non-toxic, odorless, harmless to the skin, eyes, clothing, paints or trees, and will not harm or discolor the paint finish of automobiles.—CALGON, INC., HAGGON BLVD., PITTSBURGH, PA.

Traffic Paint

Based on synthetic resin and chlorinated rubber, paint is claimed to be durable and to dry rapidly. Drying speeds vary from 11 to 20 min., reducing amount of time traffic has to be rerouted. Test cross lines laid down on heavily traveled highway intersections in New Jersey showed little signs of wear after more than two months of service.—HERCULES POWDER CO., WILMINGTON, DEL.

Wood Shingle Locking Nail

New type fastener locks wood shingles directly to gypsum sheathing. Nail has two legs, one half-enclosing the other, hinged near the end and forming a triangular loop at top. When nail is driven into material, last blow of hammer flattens top, causing a locking action. The 1¾-in. EF nails are of low carbon steel zinc coated and count 200 pieces to the pound.—ELASTIC STOP NUT CORP. OF AMERICA, 2330 VAUXHALL ROAD, UNION, N. J.

BIG BEAM
NO
400
F
U-C LITE MFG CO
CHICAGO ILL

Electric Flare

A new combination emergency light and signal flare—Big Beam 400-F—is made with a rustproof and weatherproof baked enamel steel container for its two standard dry-cell lantern batteries and connections. A double-throw, single pole switch gives instant selection of either a steady light or a flashing flare with 100-112 flashes per minute. Visible for 600 ft. Will give steady light for 20 hours, flashing for 28 hours.—U. C. LITE MFG. CO., 1050 WEST HUBBARD ST., CHICAGO 22, ILL.

OBITUARY

Col. Robert C. Williams, 58, former chief of operations and training in the Office of the Chief of Army Engineers, died Dec. 9 in Asheville, N. C. A graduate of The Citadel, Colonel Williams was an Army district engineer at Vicksburg, Miss., St. Paul, Minn., and Hawaii and was engineer instructor with the National Guard in North and South Carolina. In World War II he was chief of engineer training at Fort Leonard Wood, Jefferson Barracks, Camp Swift and Camp Claiborne. He was a graduate of the Command and General Staff School at the Army War College.

J. H. Richards, highway division engineer at Storm Lake, Iowa, and with the state highway department for 30 years, died recently.

Allen Taft Squire, 44, architect with the Federal Housing Administration in Washington, D. C., died Dec. 14 in that city. A Yale graduate and former Navy commander, he was named associate architect on joining the FHA in 1939 and was soon appointed a full architect. While serving in the Navy during World War II, Mr. Squire took part in the reconstruction of the war-destroyed buildings on Guam and from December, 1945, to May, 1946, was on loan to the Army as a land-planning expert.

Herbert C. Sadler, 76, former dean of the University of Michigan engineering and architectural colleges, died at Ann Arbor, Mich., Dec. 15. During the first world war he was a naval architect and consulting engineer for the U. S. Shipping Board. He was educated at the University of Glasgow and went to Ann Arbor in 1900 as a junior professor of engineering. He was dean from 1928 to 1937.

Edward J. Grumich, an employee of the Corps of Engineers for 25 years, died in Omaha, Neb., Dec. 12. Mr. Grumich started in the Kansas City district. He went to the Omaha district in 1934 and was in that office until illness caused his retirement last May. He was national director of the Society of American Military Engineers.

Haden C. Holmes, 66, city manager of Salisbury, N. C., for the last 16 years, died Dec. 16.

Richard Creighton Beckett, 55, of Dover, Del., sanitary engineer for the Delaware State Board of Health for the last 25 years, and executive secretary of the Interstate Commission of the Delaware River Basin, died Dec. 16 in Wilmington, Del., as the result of an automobile accident.

Frank H. Mason, 69, chief engineer Nepsco Services Inc., Augusta, Me., died in Augusta Dec. 17. He was a native of Somerville, Mass., and attended Massachusetts Institute of Technology and Rensselaer Polytechnic Institute, and graduated from the latter. In 1907 he joined the Central Maine Power Co., and in 1909 was appointed chief engineer. In 1926 he was appointed chief engineer of the Nepsco System, continuing until his death.

Joseph A. Tennant, 60, consulting engineer, who specialized in power plant design and installation, died in Houston, Tex., Dec. 14. He took his master's degree at Massachusetts Institute of Technology in 1913 and his scholastic record is still one of the finest of that institution, which presented him with a certificate of merit for his work on the Brazoria County recycling and pressure maintenance plant, said to be the largest in the world.

David W. Lamb, 63, engineer with the Public Roads Administration in the Pacific Northwest for 30 years, died Dec. 11 at Salem, Ore.

Col. Paul S. Reinecke, 60, former U. S. district engineer in St. Louis, Mo., died in Galveston, Tex., Dec. 15. While in St. Louis, he recommended a canal and lock to by-pass the Chain-of-Rocks stretch along the Mississippi River near its confluence with the Missouri. Previously he served as district engineer in Detroit, Mich., and Buffalo, N. Y. A 1911 graduate of West Point.

Gorham H. Whitney, 67, president of the Bay State Dredging and Contracting Co., a resident of Cambridge, Mass., died Dec. 17 in Boston. He had been associated with the firm 49 years. He was also vice-president of the North Atlantic Dredging Co.

Gustave A. Sandblom, 81, engineer and steel construction authority who helped to build some of New York City's earliest tall buildings, died in New York Dec. 21. A graduate of the College of Technology, Stockholm, Mr. Sandblom came to this country in 1890. He started with the Fuller Construction Co. and later was associated with architect F. H. Kimball. In 1893 Mr. Sandblom did the steel construction work on the Manhattan Life Building, regarded as the city's first skyscraper.

Kings River power work to be federally handled

In a decision involving several proposals for development of hydroelectric power resources in the Kings River basin of central California Presiding Examiner Maximilian G. Baron of the Federal Power Commission has submitted the judgment that the public interest "will best be served" if the power resources of the basin are developed by the federal government.

His recommendation is based on evidence presented by the Bureau of Reclamation at hearings in May and October. The bureau's testimony supported its comprehensive plan for the entire Central Valley project, including the Kings River basin. Interior Secretary J. A. Krug has sent the Reclamation report on the project to the President for submission to Congress.

Other proposals considered by the examiner in making his decision came from the Pacific Gas and Electric Co., and the Fresno Irrigation District. The examiner found that the PG&E plan has economic and engineering feasibility and that the company is willing and financially able to commence construction work immediately. He indicated, however, that the proposal "is not a comprehensive plan, since it does not envisage the development of the Upper North Fork . . ." of the Kings River.

In considering the application of the Fresno Irrigation District, the examiner said that under the Federal Power Act the district is entitled to preference over other applicants if its proposal is equally well adapted, or can be made so, to a comprehensive plan for development of the water resources of the region. But he came to the conclusion that the district's application "does not set out a proposed project in sufficient detail" to permit a determination of its qualifications on that basis.

◆

Concrete convention set for New York in February

Plans are complete and announcements out for the 45th annual meeting of the American Concrete Institute in New York, Feb. 23-25 at the Hotel Pennsylvania. In order to concentrate on discussions and papers relating to the state of the art, no outside entertainment features are planned, and there will be no evening sessions. The annual dinner will be replaced by a luncheon on the second day of the convention. Such top priority subjects as concrete pavement design, air entrainment, building codes, architectural concrete and precast concrete products dominate the program.

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager · *J. A. MAHONEY, Reports* · *E. R. BIGGERSTAFF, M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

January 4

Ia., Iowa Falls—City, City Hall, concrete storage reservoir, coke tray aerator, interconnecting c.i. pipe, $75,000. H. R. Green Co., 417 First Ave. S. E., Cedar Rapids, engr.

January 10

S. D., Yankton—City, water softening plant. $35,000. H. S. Nixon Eng. Co., WOW Bldg., Omaha, engr.

February 1

Ala., Sheffield—City, WW imprvs. $45,000. Wiedeman & Singleton, C. & S. National Bank Bldg., Atlanta, Ga., engrs.

LOW BIDDERS

Calif., San Francisco—Pub. Utilities Comn., City Hall, Dec. 9, recondition portion pipeline, Spec. 504, from American Pipe & Constr. Co., 1630 Webster St., Oakland, **$66,464.** CD 11/10/47—ENR 11/17/47.

Ga., Calhoun—City, Dec. 15, WW imprvs., from Stein Constr. Co., 201 Chestnut St., Chattanooga, Tenn., **$317,848**, CD 11/29—ENR 12/2.

Ore., Milwaukie—City, City Hall, Dec. 13, 1½ m.g. water reservoir, from G. T. Gentle, 4225 N. E. Beech St., Portland, **$61,401.** CD 11/16—ENR 11/18.

CONTRACTS AWARDED

N. M., Alamogordo—Town, 70,000 ft. 10 and 12 in. steel pipe from Alamorgordo to a source of supply in La Cruz Canyon, northeast of here to D. M. Spafford, Farmington, **$85,174.** Bids 11/29. Herkenhoff & Turney, 223 Montezuma St., Santa Fe, consult. engrs.

Pa., Coatesville—Lukens Steel Co., Coatesville, water treatment plant, separate contracts. **$400,000.** Fred R. Harris, Inc., 27 Williams St., New York, N. Y., engr.

Tex., Galena Park—Fred D. Leggett & Abe Zuber, 116 North Ave., Houston, c.i. waterlines, own forces.

Ont., Niagara Falls—Niagara Falls Park Comn., Niagara Falls, watermains, to Dick Constr. & Eng. Co., 63 Empire St., Welland. Est. **$40,000.** CD 2/4/44—ENR 2/24/44.

SEWERS, WASTE DISPOSAL

BIDS ASKED

January 6

Ia., Des Moines—Bd. Trustees Urbandale-Windsor Heights Sewer Dist., sewage collecting lines, **$125,000.** Brown Eng. Co., 202 Valley Bank Bldg., engrs. CD 9/16—ENR 9/23, under LB.

January 10

Minn., Blackduck—Village, H. J. Lien, clk., waste treatment plant. $65,000. Plans deposit $10. Extended date. W. C. Larson, Detroit Lakes, engr. CD 11/24—ENR 12/2.

Idaho, Buhl—City, City Hall, 9,861 ft. 18 and 21 in. vitr. clay or concrete trunk sewers, $100,000. Plans deposit $5. J. L. Hoffman & C. C. Fiske, Box 1121, Boise, engrs. CD 10/1—ENR 12/28.

Mo., Mount Vernon—City, c/o Eldred Seneker, mayor, City Hall, and State Tuberculosis Hospital, c/o Samuel Marsh, dir. State Dpt. P. Health & Welfare, Jefferson City, sewage treatment plant, auxiliaries, appurtenances, etc., to serve city and State Tuberculosis Hospital. $130,000. W. B. Rollins & Co., 327 Railway Exchange Bldg., Kansas City, Mo., engrs. CD 5/12—ENR 5/27.

January 12

Mass., Marblehead—Town, Bd. Selectmen, Town Hall, sewage pump. station, force main, Clifton-Marblehead. $50,000. Haley & Ward, 73 Tremont St., Boston, engrs. CD 1/22/47—ENR 2/6/47.

January 18

Kan., Liberal—City, Phil Minner, mgr., sewage disposal plant addn., incl. primary clarifier, 2 trickling filters, final settling tank, digester, addn., sludge beds, two 600 gpm. sewage lift pumps, H. R. Hunter, 105 W. English St., Wichita, Zone 2, engr.

About February 8

Mo., Mount Vernon—City, Eldred Seneker, mayor, City Hall, and State Tuberculosis Hospital, Samuel Marsh, dir. State Dpt. P. Health & Welfare, Jefferson City, sanitary sewer imprvs. to serve city and State Tuberculosis Hospital. $85,000. W. B. Rollins & Co., 327 Railway Exchange Bldg., Kansas City, 6, Mo., engrs. CD 5/12—ENR 5/27.

About March 3

Kan., Sterling—City, C. K. Cooke, City Hall, Part 1, sewage disposal plant, auxiliaries, appurtenances, etc.; Part 2, about 3,480 ft. 12 and 18 in. vitr. clay sewers. Wilson & Co., 223 N. Santa Fe St. and P. O. Box 937, Salina, engrs. CD 12/1.

LOW BIDDERS

Ga., Valdosta—City, Dec. 8, sanitary sewer imprvs., from J. B. McCrary Co., 22 Marietta St. Bldg., Atlanta, **$61,724.** CD 11/24—ENR 12/2.

N. Y., Amherst—Town Clerk, Town Hall, Main St., Williamsville, rejected bids Dec. 6, sewage treatment plant alterations, addns. L. B. **$677,000.** Est. $575,000. Will re-advertise. CD 11/1—ENR 11/4.

Ore., Pendleton — City, City Hall, Dec. 15, primary treatment sect. of sewage treatment plant, from Carl M. Halvorson, Builders Exchange Bldg., Portland, **$131,821.** Cornell, Howland, Hayes & Merryfield, Rennie Bldg., Corvallis, engrs.

CONTRACTS AWARDED

●**Pa., Phila.**—Dpt. P. Wks., City Hall Annex, 23 Main St. main relief sewer, to Robert Lombardia, Real Estate Trust Bldg., **$1,137,973.** CD 9/24—ENR 9/30, under LB.

Tex., Galena Park—Fred D. Leggett & Abe Zuber, 116 North Ave., Houston, sanitary sewers, own forces. **$55,000.**

BRIDGES

BIDS ASKED

January 20

†**Arizona-Nevada** — Bureau Reclamation, Dpt. Interior, Davis Dam, Nev., furnishing, erecting structural steel for highway bridge across forebay channel, at Davis Dam, Davis Dam Proj., on Colorado River, near Kingman, Ariz., Spec. 2506, L. N. McClellan, ch. engr.

CONTRACTS AWARDED

●**Delaware**—State Hy. Dpt., Wilmington, approach piers and anchorage blocks for Delaware River Memorial Bridge south of Wilmington, east approach land piers, Contr. 3-c, to Lewis & Bowman, 3316 Bainbridge Blvd., Norfolk, Va., **$709,650*****west approach land piers Contr. 3-b, to Conduit & Foundation Corp., 770 S. Schuylkill Ave., Phila., Pa., **$609,520*****anchorage blocks Contr. 3-d, and approach river piers, Contr. 3-a, to Merritt, Chapman & Scott Corp., 17 Battery Pl., New York, N. Y., **$1,830,000** and **$1,291,240** respectively. Grand total $4,440,410. CD 12/2—ENR 12/9, under LB.

Tennessee and Arkansas—State Hy. Dpt., Nashville, Tenn. and State Hy. Dpt., Little Rock, Ark., 1.5 mi. 4 lane conc. exten. from new bridge over Mississippi River at Memphis, Tenn. to St. Francis Levee in Ark., to Ben M. Hogan & Co., 1100 Fairview St., Little Rock, Ark., **$425,554.** CD 11/29—ENR 12/2.

Utah—State Road Comn., Salt Lake City 2 span rein.-con. bridge, approaches, on U. S. Hy. 91, between Scipio and Levan, FAP FI 238 (1), Juab Co., to Thatcher Constr. Co., 314 Kiesel Bldg., Ogden. **$84,748.** Est. $97,333. Bids 12/7. CD 11/26.

STREETS AND ROADS

LOW BIDDERS

●**Michigan**—State Hy. Dpt., Lansing, Dec. 15, from Bridgeport Core & Sand Co., 545 Davenport St., Saginaw, c. conc. 3.456 mi. M-60 relocation east of Vandallie E. to county line, Cass Co. and 2,396 mi. M-60 relocation W. county line E. to West Fabius in St. Joseph Co. **$324,593**; 6.014 mi. F 20-4 C-3, U. S. 27 Higgins Lake, Crawford Co., **$369,293**; 0.63 mi. M 25-36 C-1, U. S. 23 Ann Arbor St., and Fenton Rd. Flint, Genesee Co., **$129,363** ••• from L. W. Edison, 924 Floral Dr., Grand Rapids, 4.251 mi. M-89, Richard and East, Kalamazoo Co., **$249,377**; 3.31 mi. Muskegon East Belt from U. S. 16 North to Laketon Ave., Muskegon Co., **$199,047*****from Loselle Constr. Co., Wyandotte, 4.842 mi. F-30-4 C-5, Ohio State Line N., Hillside Co., **$388,310*****from Johnson-Greene Co., 616 Ann Arbor Trust Bldg. Ann Arbor, stab. aggregate 5.918 mi. M-66, south county line North to U. S. 10, Osceola Co., **$149,047*****from Blue Water Excavating Co., 1821 Elwood Rd., Port Huron surf. dual roadway, Port Huron W. belt from Strawberry Lane to Black River Bridge, U. I. 77-69, C-7, St. Clair Co., **$95,683.** CD 12/1—ENR 12/9.

Tex., Corpus Christi—City, addnl. b. conc streets from J. M. Dellinger, Inc., 2425 Leoperd St., **$109,134.** CD 12/7—ENR 12/9.

British Columbia—Province of British Columbia, Parliament Bldgs., Victoria, Dec. 10, 4.5 mi. hy., Bowser Creek Sect., Island Hy., Comox, from W. C. Arnett & Co., Ltd., c/o Tomlinson Constr. Co., Ltd., 21 King St. E., Toronto, Ont., **$181,940.** CD 12/3.

CONTRACTS AWARDED

New Mexico—State Hy. Dpt., Santa Fe, grading, minor drainage structures, watering and rolling, ballast, levelling course, etc. 12.375 mi. S. R. 172, Chaves Co., and bit.-asph. 6.055 mi. S. R. 88 between Tucumcari and Wheatland, Quay Co., to Wheeler & Trotz, 2129 E. Lead Ave., Albuquerque, **$82,157** and **$136,406** respectively. Bids 12/17. CD 12/8.

Tex., Alice—Jim Wells Co., Alice, 5 mi. asph. and 2 concrete culverts, Precinct 1, to Heldenfels Bros., 521 McBride Lane, Corpus Christi. **$50,000.** Bids 12/8.

Tex., Galena Park—Fred D. Leggett & Abe Zuber, 116 North Ave., Houston, b. conc. streets, own forces. **$60,000.**

EARTHWORK, WATERWAYS

BIDS ASKED

January 11

†**California**—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., four 10 x 7 ft., two 11 x 14 ft., five 11 x 18 ft. and three 10 x 18 ft. radial gates for Friant Kern Canal, Station 3765 plus 75.00, 3876 plus 50.67 and 4410 plus 00, Central Valley Proj., Spec. 2496, L. N. McClellan, ch. engr.

†**California**—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., furnish, del. f.o.b. cars shipping point or f.o.b. cars Redding, steel pipe crest railings for Keswick Dam, Central Valley Proj., Spec. 2502. L. N. McClellan, ch. engr.

January 13

†**California**—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Herdlyn, 1 lot bulkhead gate metalwork for 12 gate openings, for pump draft tubes, Tracy Pumping Plant Central Valley Proj., Spec. 2497. L. N. McClellan, ch. engr.

LOW BIDDERS

†**Minnesota**—U. S. Eng., 121 U. S. Post Office and Custom House, St. Paul, Zone 1, rejected bids Dec. 7, apron and gates, Pine River Dam, headwaters Mississippi River. L.B. **$62,00** Will readvertise in Spring. CD 12/14—ENR 12/16.

†**Virginia, Florida and South Carolina**—U. S. Eng., Custom House, Charleston, S. C., Dec. 8 maintenance dredging Atlantic Intracoastal Waterway between Norfolk, Va. and the St. Johns River, Fla., Charleston Dist. (Shoals between Winyah Bay and Charleston, S. C.) Item 2, from Steen Constr. Corp., 541 Front St., Norfolk, Va., **$113,086** est. $90,491; Item 3, from Norfolk Dredging Co., Campostella Wharf, Norfolk, Va., **$189,513** est. $172,909. Received no bids Dec. 8, Item 1, est. **$89,245.** CD 11/12—ENR 11/18.

†**Virginia**—U. S. Eng., foot of Front St., Norfolk, Dec. 7, maintenance dredging in James River from Richmond Deep-water Terminal to

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Hopewell, Serial No. Eng-44-110-49-99, from Atkinson Dredging Co., Great Bridge, Schedule 1 **$117,099** est. $148,453 Schedule 2 **$151,244** est. $148,483; Schedule 3 **$123,396** est. $148,483; Schedule 4 **$144,947** est. $148,483. CD 11/11—ENR 11/18.

♦Washington—U. S. Eng., 4735 E. Marginal Way, Seattle Zone 4, received no bids Dec. 15, restoring rock breakwater, Neah Bay. **CD 12/8.**

AIRPORTS AND AIRBASES

BIDS ASKED

January 5

W. Va., Beckley—AIRPORT—**Raleigh Co.,** Courthouse, construction first stage of development of Raleigh County Memorial Airport, located 3.5 mi. east of here, incl. clearing runway approach zone, and clearing, grubbing, grading, draining 1 landing area, incl. administration area, hangar area, park and paving 1 runway, taxiway, apron and access road. Plans deposit $25. Robert L. Davis Co., 213½ Prince St., engr. CD 8/18—ENR 8/26.

January 12

♦Va., Chincoteague—TAXIWAY GATE—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, rolling taxiway gate at Naval Aviation Ordnance Test Station, Spec. 21502. Plans deposit $10.

♦Va., Norfolk—BULKHEAD—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Zone 11, repairing East Bulkhead at Chambers Field Naval Air Station, Spec. 21278. Plans deposit $10.

About February 3

♦N. D., Fargo—TAXIWAY—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., 50x117 ft. concrete surfaced taxiway for Hector Airport, Spec. No. 25-066-49-151.

LOW BIDDERS

Pa., Phila.—AIRPORT—Dpt. Pub. Wks., City Hall Annex, paving, apron and approaches, International Airport, from Lauter Constr. Co., 112 S. 16 St., **$436,399.** A. Zane Hoffman, c/o owner, engr. CD 2/19/46—ENR 3/7/46.

S. D., Brookings—AIRPORT PAVING—City, Dec. 9, Sect. 2, airport paving, from Alexander Constr. Co., 4641 Hiawatha Ave., Minneapolis, Minn., **$139,474.** CD 11/24—ENR 12/2.

CONTRACTS AWARDED

B. C., Fort St. John—AIRPORT DEVELOPMENT—Dominion Govt., Ottawa, Ont., airport development, to W. T. Lamby, Fort St. John, Est. **$50,000.** Dpt. Transport, Ottawa, Ont., engr.

LATIN AMERICA

Mexico, Ojinaga—Mexican Govt., Balderas, 94, Mexico, D. F., receiving bids January 4, WW and sewerage with Inter American Public Health Co-operation Direction, Wyman R. Stone, dir. Plans deposit $2.75.

PUBLIC BUILDINGS

BIDS ASKED

January 3

Va., Marion—At office Comr. Dpt. Mental Hygiene & Hospitals, 12 and Main Sts., Richmond, laundry at Southwestern State Hospital. Eubank & Caldwell, Inc., Boxley Bldg., Roanoke, archts. CD 12/6/44—ENR 12/28/44.

January 6

♦Ga., Camp Gordon (P. O. Augusta)—U. S. Eng., Post Office Bldg., Savannah, rehabilitation bldgs., facilities, Station Hospital, Serial No. Eng-09-133-49-79. Extended date. CD 11/17—ENR 11/25.

Ill., Alton—State, Springfield, general work, heating, ventilating, plumbing, electrical wiring for tuberculosis unit at Alton State Hospital. $400,000. C. Herrick Hammond, Armory Bldg., Springfield, ch. state archt., CD 4/9/45—ENR 4/19/45.

Ill., Dixon—State, Springfield, general work, heating, plumbing, ventilating, electrical wiring for tuberculosis unit at Dixon State Hospital. $400,000. C. Herrick Hammond, Armory Bldg., Springfield, ch. state archt., CD 4/9/45—ENR 4/19/45.

Ill., Peoria—State, Springfield, general work, heating, ventilating, plumbing, electric wiring for tuberculosis unit at Peoria State Hospital. $400,000. C. Herrick Hammond, Armory Bldg., Springfield, ch. state archt. CD 4/9/45—ENR 4/19/45.

La., Ruston—Town, H. T. Richardson, mayor, City Hall, power plant alterations, addns. Smith & Padgett, 512 Ouachita National Bank Bldg., Monroe, archts. CD 10/11—ENR 10/28.

January 10

Calif., Ukiah—Mendocino Co., Courthouse, 4 story, rein.-con. jail and courthouse, $580,000. Plans deposit $15. Clarence Caulkins, Rosenberg Bldg., Santa Rosa, archt. C. Jefferson Sly, 580 Market St., San Francisco, engr. CD 12/13—ENR 12/16.

Conn., Wethersfield—Bd. Educ., addn. to Stephen M. Mitchel School. $500,000. Plans deposit $25. Sherwood F. Jeter, Jr., 25 Lewis St., Hartford, archt. CD 2/27—ENR 3/18.

Mich., Lansing—Bd. Educ., Lansing, J. W. Sexton High School Auditorium. $250,000. Warren S. Holmes Co., Capitol Tower Bldg., archt. Harry L. Chamberlin, 511 Carey St., engr.

Ont., Gravenhurst—Hydro Electric Comn. of Ontario, 620 University Ave., Toronto, 60x110 ft., concrete, steel, garage, machine shop. Over $75,000. Plans deposit $10.

LOW BIDDERS

♦California—U. S. Eng., 74 New Montgomery St., San Francisco, Dec. 14, enlisted men's service club and swimming pool at Camp Stoneman. Spec. 04-203-49-5, from Vezey Constr. Co., 3760 Ardley Ave., Oakland. **$534,378.**

Calif., Camarillo—State Div., Architecture, P. Wks. Bldg., Sacramento, Dec. 14, 2 story, rein.-con. Farm Colony ward bldg., physicians residences, garages, from Williams & Burrows, 10 California Dr., Burlingame. **$399,770.** CD 11/24—ENR 12/2.

Calif., Montebello—Montebello Unified School Dist., 123 S. Montebello Blvd., rejected bids Nov. 16, 1,500 seat auditorium and music bldg. at Montebello Senior High School. LB. **$494,750.** Est. $350,000. CD 11/24—ENR 12/2, under LB.

Calif., Pasadena—Tournament of Roses Assoc., City Hall, Dec. 13, 9,000 seat, rein.-con. addn. to Rose Bowl, from West & Douglass, Palm and Glenrose Sts., Altadena. **$286,447.** CD 11/24—ENR 12/2.

Fla., Clearwater—Pinellas Co., Dec. 14, jail, from Paul Smith Constr. Co., 310 N. Rome Ave., Tampa, **$525,000.** CD 12/2.

Ia., Winterset—Madison Co., c/o Bd. Trustees Hospital Assn., Nov. 30, hospital, from L. E. McCorkle Contg. Co., Winterset. **$257,533.** CD 1/16—ENR 2/5.

●N. Y., Cheektowaga—School Dist. 3, Cheektowaga, Junior-Senior School, from John W. Cowper Co., Inc., Sidway Bldg., Buffalo, **$1,261,545.**

N. Y., New York—New York City Housing Auth., 63 Park Row, Zone 7, Dec. 20, foundations, appurtenances for Sedgwick Houses (Consolidated City-aided Houses), Proj. NYC-14 in area bounded by proposed Cross-Bronx Expressway on southeast, W. 174 St. on northeast, Undercliff Ave. on northwest and a line on southwest running along boundary of proposed park, Bronx Boro, from Brookfield Constr. Corp., 521 Fifth Ave., New York, Zone 17, **$392,740.** CD 12/1—ENR 12/9.

●Pa., Phila.—Bd. Educ., 12 and Winter Sts., rejected bids Dec. 7, school, 57 St. and Wynnefield Ave. **$1,233,660.** Will readvertise. CD 11/30—ENR 12/2.

Tex., Dallas—Dallas Independent School Dist., Akard and Lamar Sts., Dec. 14, masonry Maple Lawn School, from Norgaard & Shaw, 2933 N. Henderson St. **$498,000.** Est. $275,000. CD 12/2.

Tex., Odessa—City, A. P. Brown, mayor, Dec. 15, 2 story masonry, steel, Central Police and Fire Station, from Von Frellick, Inc., P.O. Box 209, San Angelo. **$283,916.** Est. $280,000. CD 10/18—ENR 11/11.

Tex., Port Lavaca—Calhoun Co., Port Lavaca, Dec. 16, hospital, from Commercial Constr. Co., 341 N. Comal St., San Antonio. **$253,853.** CD 4/5—ENR 4/15.

CONTRACTS AWARDED

●Calif., Redwood City—Sequoia Hospital Dist., Courthouse, 4 story, rein.-con. 100 bed hospital, to Parker, Steffens & Pearce, 135 South Park St., San Francisco, **$1,792,000.** CD 12/16—ENR 12/23, under LB.

Colo., Fort Collins—School Dist. 5, Bd. Educ., Fort Collins, general contract A. H. Dunn School, 1 story, 162x164 ft., brick with wing 78x69 ft. and north classroom wing 58x154 ft., 12 classroom kindergarten cafeteria, kitchen, etc., to Johns Engineering Co., 375 Klamath St., Denver. **$288,467.** Bids 12/10, awarded 12/13. CD 11/18—ENR 11/25.

Neb., North Platte—Bd. Educ., North Platte Junior High School and Senior High School addn., to United Builders, North Platte. **$843,970.** Bids 12/9. CD 11/16—ENR 11/18.

N. M., State College—New Mexico College of Agriculture & Mechanical Arts, Clovis, boys' dormitory, to C. H. Leavell & Co., 1900 Wyoming St., El Paso, Tex. **$312,989.** CD 5/19—ENR 6/10.

†O., Chillicothe—Veterans Admin., 52 S. Starling St., Columbus, general contract Main Kitchen and Dining Hall Bldg. 7, alterations, addns. at Veterans Admin. Hospital, for Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash., 25, D. C., to Ang Constr. Co., 209 S. 3 St., Columbus***elevators to Capitol Elevator & Mfg. Co., 424 W. Town St., Columbus***heating and ventilating, to Columbus Heating & Ventilating Co., 182 N. Yale St., Columbus. Est. **$277,000.** CD 6/25—ENR 7/1.

●Pa., Phila.—Bd. Educ., 21 and Winter Sts., school, 75 St. and Woodbine Ave., to McCloskey & Co., 1620 W. Thompson St., **$1,170,698.** Bids 11/16. CD 11/30—ENR 12/2, under LB.

●Pa., Warren—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general contract, admission bldg. at Warren State Hospital, to Navarro Corp., Navarro Bldg., Pittsburgh, Zone 6, **$1,096,500.** Bids 12/1. CD 12/7—ENR 12/9, under LB.

S. D., Winner—City, building changes and generating equip., to Nordberg Mfg. Co., 3073 S. Chase Ave., Milwaukee, Wis. **$100,805.** Bids 12/8. H. S. Nixon Eng. Co., WAW Bldg., Omaha, Neb., engr.

●Tex., Austin—University of Texas, Austin, science bldg. and student health center, to Nathan Wohlfeld, P.O. Box 7084, Dallas. **$2,079,336** and **$962,733** respectively. Bids 12/15. CD 9/27—ENR 9/30.

N. S., Middleton—G. V. Fowler, clk., City Hall, 1 story, bsmnt., brick high school, to M. A. Condon, 63 Aberdeen St., Kentville. Approx. **$343,694.** CD 11/17—ENR 11/25.

COMMERCIAL BUILDINGS

BIDS ASKED

January 5

Neb., Omaha—United Orthodox Synagogue, c/o Rabbi Israel Mowshowitz, 3029 Lafayette Ave., church, 53 and Charles Sts. **$450,000.** Kivett & Myers, 1016 Baltimore St., Kansas City, Mo., archts. CD 12/6/46—ENR 12/19/46.

January 7

Fla., St. Petersburg—American Legion Hospital, c/o Hadley & Atkinson, archts., Taylor Arcade, children's hospital. Over $500,000. CD 4/17/47—ENR 5/1/47.

N. Y., White Plains—Young Men's Christian Assn., 440 Main St., Greenfield, Mass., (selected list bidders) Y.M.C.A. bldg. $400,000. National Y.M.C.A. Counsul Bldg. Service, 350 Fifth Ave., New York, Zone 1, archt.

January 11

Tex., Corpus Christi—Church of the Good Shepherd Episcopal, 701 S. Broadway, 2 story, bsmnt., brick, concrete, steel, hollow tile church, concrete fdn. air-conditioning. $250,000. Plans deposit $25. Clarke, Nevins & Scoville, 1st. Federal Bldg., West Palm Beach, Fla., and Lynn A. Evans, 1218 S. Staples St., archts. W. E. Simpson Co., Milam Bldg., San Antonio, structural engr. Maurice H. Connell & Assoc., Langford Bldg., Miami, Fla., mechanical engrs.

January 12

Calif., Boyes Hot Springs—Roman Catholic Archbishop of San Francisco, 1100 Franklin St., San Francisco, Archbishop Hanna School for Boys, incl. living quarters, school, infirmary, etc. Over $500,000. Plans deposit $10, J. Francis Ward, John S. Bolles & Mario Ciampi, 58$ Market St., San Francisco, archts. Clarence E. Seage, 932 Monadnock Bldg., San Francisco, engr.

About January 15

Ky., Covington—Booth Memorial Hospital, c/o E. O. & G. T. Landberg, archt., 1114 Garfield Pl., Cincinnati, O., hospital. $295,000. CD 9/22—ENR 10/7.

About March 15

Ia., Davenport—American Legion Post No. 26, c/o commander, 200 S. Perry St., rein.-con. brick American Legion Post Headquarters. $335,000. Kruse & Parish, Kahl Bldg., archts. CD 12/1—ENR 12/16.

SOON LETS CONTRACT

Calif., Palo Alto—Peninsula Housing Assn., Box 258, soon lets contract 29 one story wood frame Ladera residences, Portola Rd. $350,000. John C. Funk & Jos. Allen Stein, 121 Beale St., San Francisco, archts. CD 11/24—ENR 12/2.

La., De Ridder—Beauregard Memorial Baptist Hospital, c/o Neild & Somdal, archts., Texas Eastern Bldg., Shreveport, soon lets contract hospital. CD 12/2—ENR 12/9.

Mass., Newburyport—Immaculate Conception Parish, 7 Court St., soon lets contract 4 story, bsmnt. convent. Over $250,000. J. A. McPherson, 250 Huntington Ave., Boston, archt. CD 8/23—ENR 9/9.

Tex., Beaumont—J. Weingarten, Inc., 808 Prairie St., Houston, soon lets contract foods store. $250,000. Finger & Rustay, National Standard Bldg., Houston, archts. CD 12/8—ENR 12/16.

Tex., Houston—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, soon lets contract 2 story, bsmnt. stucco exterior telephone bldg. concrete slab and beam fdn. $250,000.

Tex., Port Arthur—J. Weingarten, Inc., 808 Prairie St., Houston, soon lets contract store $250,000. Finger & Rustay, National Standard Bldg., Houston, archts. CD 12/8—ENR 12/16.

Tex., Wichita Falls—First Baptist Church, Wichita Falls, soon lets contract masonry church addn. and chapel, concrete foot and grade beam fdn. $300,000. Extended date. Jesse G. Dixon, 913-B, Indiana.

LOW BIDDERS

Mo., Springfield—First Baptist Church, South and Elm Sts., received no bids Dec. 10, church **$100,000-$500,000.** Project postponed indefinitely. CD 11/4—ENR 11/11.

Mo., Springfield—Frisco Employees Hospital Assn., W. B. Berry, chn., St. Louis-San Francisco R.R., Jefferson and Olive Sts., rejected bids Nov. 23, 3 story, rein.-con. hospital. L. B. **$631,877**, for general contract. Project abandoned. CD 12/3—ENR 12/9.

CONTRACTS AWARDED

Ala., Mobile—Blessed Martin de Porres Hospital, c/o Chas. H. McCauley, archt., Jackson Bldg., Birmingham, hospital, to Daniel Constr. Co., 822 7 Ave. S., Birmingham, **$369,421.** CD 12/8—ENR 12/16.

Calif., Fairfield—Chas. Cournale & Richard Caroe, 601 Georgia St., Vallejo, 166 residences in Fairview Addn., to Geddes, Smith Inc., 942 Main St., Napa. Est. **$800,000.**

Calif., San Rafael—R. P. Paoli, 2530 Lombard St., San Francisco, 16 unit housing development (at cost of $17,500 each) in Mesa Visla Subdivision. Owner builds. Over **$275,000.** Rolland B. Hammond, Mill Valley, archt.

●Del., Wilmington—Owner, c/o Edwards & Green, archts. and engrs., Broadway and Car-

"WE CLEAN A ROAD GRADER IN 8 HOURS
WITH HYPRESSURE Jenny
HAND CLEANING USED TO TAKE 80 HOURS"

HYPRESSURE JENNY CLEANS

by a highly atomized mixture of steam, hot water and cleaning compound applied under pressure through an adjustable spray gun. Mud, muck and grease are removed almost instantly. Hypressure Jenny is portable . . . easy and economical to use. Ordinary labor can operate it. Full-powered, all-purpose, heavy-duty models are available from $445 to $595.

Hypressure Jenny cleans all types of construction equipment . . . *10 times faster than it can be done by hand.*

Here's what some other construction equipment users say about Hypressure Jenny steam cleaning:

"We save $25.00 on each piece of equipment we clean with Hypressure Jenny."

"Hypressure Jenny steam cleaning helps us locate fractures and trouble on bulldozers before they break down."

"One man with Hypressure Jenny can clean equipment in one hour that formerly required 18 hours to clean by hand."

Wire or write for full information. No obligation.

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HOMESTEAD VALVE MANUFACTURING COMPANY
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- Hotel Open • Jan.-April • All outside rooms with private tile bath and shower.
- Double room $30 daily and up-Single occupancy $22 daily and up.

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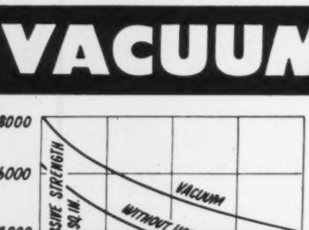
VACUUM CONCRETE



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Squeezes out water under ¾ ton / sq. ft. pressure.

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man Sts., Camden, N. J. apartment development, separate contracts. Est. **$3,200,000.**

Fla., Miami—The Mackle Co., 2818 S. W 22 St., 134 homes in Grapeland Heights Sect., force account. **$670,000.**

N. J., Camden—Master Built Homes, Inc., 1900 Park Blvd., residential development, Park Blvd., separate contracts. **$250,000.** Coen Thomas Assoc., 726 Cooper St., archts.

N. J., Toms River—Owner, c/o Edwards & Green, engrs. and archts., Broadway and Carmen Sts., Camden, apartment development, separate contracts. **$250,000.**

N. Y., Glens Falls—Glens Falls Natl. Bank & Trust Co., Glen St., bank, to Consolidated Constructors, Inc., 18 E. 41 St., New York, Zone 17. Est. **$250,000.** Bids 11/12. CD 10/26—ENR 10/28.

●**N. Y., New York**—United Nations Headquarters Planning Office, 405 E. 42 St., Zone 17, secretariat building and garage, to Slattery Contg. Co., 72-02 51 Rd., Woodside, George A. Fuller Co., 597 Madison Ave., Turner Constr. Co., 420 Lexington Ave., and the Walsh Constr. Co. 1 E. 43 St. Est. **$24,000,000.** Bids 12/1. CD 11/29—ENR 12/9.

●**Pa., Ardmore**—Suburban Co., Times Medical Bldg., department store addn. and 6 new stores, to Turner Constr. Co., 1500 Walnut St., Phila. **$1,000,000.** Bids 11/15. Strawbridge & Clothier, Montgomery Ave., lessee. CD 10/27—ENR 11/4.

Pa., Hatboro—Jayson Stover, Crooked Billet Norwyn Rd., residential development Norwyn Rd., separate contracts. **$250,000.**

Pa., Phila.—Morton Dratch, 7977 Rugby St., residential development, Sharpnack St., separate contracts. **$268,000.** CD 2/18—ENR 2/26.

●**Tex., Dallas**—Merchandise Mart, Inc., c/o Joe B. Salmon, pres. National Industries Corp., Republic Bank Bldg., 10 story, bsmnt., 200x400 ft. masonry merchandise mart, incl. 1,000 auto storage area, 15 high speed elevators, to George P. O'Rourke Constr. Co., 1001 W. Commerce St., Approx. **$7,000,000.** Est. $6,500,000. R. A. McGarry, 904 Fort Worth Ave., engr.

Tex., Fort Worth—Ridglea Housing Corp., P. O. Box 965, 98 residences in Ridglea West Addn. Owner builds. Approx. **$475,000.** CD 12/10—ENR 12/23.

Tex., Houston—Ira Berne, c/o Archer Development Co., Bankers Mortgage Bldg., 69 frame dwellings, Market Street Gardens, own forces. Approx. **$400,000.** CD 12/10—ENR 12/23.

●**Tex., Houston**—Home Owned Properties, Inc., Scanlan Bldg., 298 dwellings, in part of Stratford Pl., own forces. **$1,350,000.** CD 12/1—ENR 12/16.

Tex., Houston—E. E. Mangum, Jr., 2006 Elmen St., 35 dwellings, Mangum Pl. Owner builds. **$250,000.**

Tex., Houston—Plaza Development Co., 8012 Harrisburg Blvd., 60 dwellings, Scott St. near Foster School. Owner builds. **$450,000.** CD 12/15; housing, in Greenway sub-division, Sect. 4, own forces, **$275,000.**

Tex., Houston—Manuel Rudy, c/o Cossette Demolishing Co., 210 Sidney St., 60 apartments, Kingston St., Approx. **$425,000;** 32 apartments, on 4½ acre tract, Kingston St., **$325,000,** own forces. CD 5/14/47—ENR 3/22/47.

Tex., Lubbock—Broadway Church of Christ, Lubbock, church, to BMFP Constr. Co., 1915 Avenue Q, **$634,800.** Bids 11/18. CD 11/23—ENR 12/2.

●**Tex., Pasadena**—Max Krauss, Pasadena, 150 duplexes. Owner builds. **$1,350,000.** CD 4/13—ENR 4/29.

Tex., West University Place (Houston P. O.)—Reed & Yancey, 3802 Richmond Rd., Houston, 50 high type dwellings, Sec. 12, Sunset Terrace. Owner builds. Approx. **$950,000.** CD 8/13—ENR 8/26.

Alta., Calgary—Owner, c/o contractor, housing, to Engineered Buildings, Ltd., 538 Sixth Ave. E. Approx. **$278,000.**

Man., Winnipeg—D. Titus, 11304 63 St. W., apartment. Owner builds, **$300,000.** F. MacDonald, 220 Kresge Bldg., archt.

Ont., Moonbeam—Roman Catholic Separate School Bd., Moonbeam, 1 story, bsmnt., 33x210 ft., rein.-con. school, to D. Charbonneau, 7 8th St., Hearst. Est. **$250,000.** J. F. Brennan, 906 Yonge St., Toronto, archt. Morrison & Assoc., 96 Bloor St. W., Toronto, engrs.

Ont., St. Thomas—First United Church, 7 Curtis St., 2 story, 67x123 ft., stone, brick church, to Putherbough Constr. Co. Ltd., 320 Colborne St., London, **$235,000.** Est. $250,000. Brown & Brisley, 12 E. Bloor St., Toronto, archts.

Ont., Toronto—Roman Catholic Episcopal Corp., 206 Church St., Notre Dame High School, Malvern Ave., to George Hardy, Ltd., 163 Wickstead Ave., Approx. **$500,000.** Bids 12/10. CD 12/3.

Que., Carillon—Reverand Bros. of Ste. Croix, 5542 Cote de Neiges Rd., Montreal, 3 story, bsmnt., rein.-con. steel, brick stone seminary, to P. J. Martel, 5339 Woodbury St., Montreal, est. **$250,000.** L. Lavose, 1480 St. Joseph Blvd., Montreal, archt. Lalonde & Valois, Canada Cement Bldg., Montreal, engrs.

Que., Roberval—Reverand Sisters of Augustine, St. Michael de Roberval, 4 story, 40x121 ft., rein.-con. steel, brick, stone nurses home, to Dansereau Ltd., 1387 Bernard St., Montreal, E. Larose, 1480 Blvd. St. Joseph, Montreal, archt. Lalonde & Valois, Canada Cement Bldg., Montreal, engrs.

A MESSAGE TO AMERICAN INDUSTRY • 70th OF A SERIES

"Give us the tools . . ."

For High Wages, Full Employment . . . Business Must Have Better Tools *and More Money to Pay for Them*

So far we have escaped the post-war depression predicted by leading government economists. How can we continue to frustrate gloomy prophets who see only depression ahead?

At the end of World War II the federal Director of Reconversion saw depression immediately ahead. He said we would have 6,000,000 unemployed four months after VJ-Day and 8,000,000 a few months later.

But we did not have depression. We did not because:

First, the American business man, sensing the obligations of a vastly more important post-war America, went ahead to build his plant and equipment to meet expanding domestic and world markets—markets bigger actually and potentially, in terms of world-wide trade and profits than any previously envisaged.

Second, the American businessman was able to get the money to go ahead. Since 1945 he has spent $50 billion building new plants and buying new equipment.

There may be other reasons why we missed a depression in 1946. But—make no mistake about it—what has powered our present prosperity is the $50 billion spent by businessmen since VJ-Day to improve their plants.

It provided jobs directly for 5 million people. It paid for more than half of our record-breaking steel output. It put in place the foundations of great new industries such as television. It strengthened the foundations of the chemical, machinery, plastics, steel and oil industries. It has expanded and improved our power systems throughout the country.

This spending has made the difference between prosperity and slump, between industrial strength and serious deterioration.

In fact, we know now that what business spends for new plants and new tools always makes the difference between prosperity and slump, the difference between national strength and weakness.

The accompanying chart tells the story. When we have spent heavily for new plants and equipment, we have had prosperity and strength. When we have not, we have been in trouble.

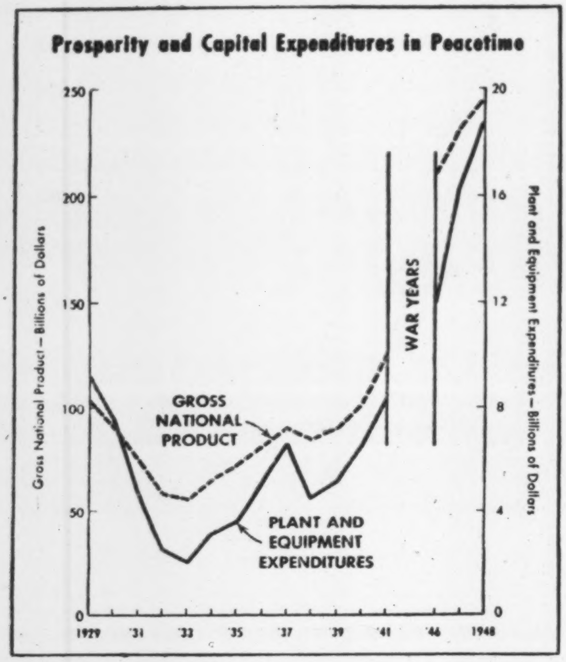
We would have been in trouble since VJ-Day except that business used its war reserves, plus two-thirds of its profits, plus borrowed money to improve and expand its facilities. This year industry is spending $19 billion this way.

Has this great post-war expansion actually made our economy a "mature economy"? Have we come now to the saturation point the New Dealers mistakenly said we had reached in the '30's?

The answer is no!

Proof of that answer is being developed through a McGraw-Hill national survey of "Business' Needs for New Plants and Equip-

continued on next page



ment" details of which will be given in this editorial series in coming months.

We have a bigger nation, more people, to serve right here at home. Further we must meet human needs which the war created around the world. Also, we must sustain a world position such as this country never assumed before.

Here are immediate things crying to be done.

1. Business still needs billions to expand production because our country and our needs are growing rapidly. Example: To meet the demand for power, electric utility companies must nearly double their present generating capacity in 10 years. That will cost more than $7.5 billion. To fill increasing needs for oil and gasoline, oil companies must spend at least as much.

2. Business still needs billions to get its plants up to date and overcome wear and tear. Examples: Over half a million of our freight cars, a third of the total, are more than a quarter of a century old. About two-thirds of the looms in the textile industry are more than 20 years old. Half of our coke ovens, basic equipment for iron and steel production, are more than 20 years old, and only half as efficient as modern ovens.

3. Business still needs many billions to do new things in dramatic new ways. Example: Machinery that will cut out 80% of the dirty, dangerous work of mining soft coal has been perfected. A new automobile engine plant will reduce the work that goes into engine-building by three-quarters.

Hundreds of similar things that our scientists and engineers have developed could be cited. They can be found in every industry. They hold immeasurable promise of adding to the abundance of American living. In fact, there is hardly a step along the whole route of industry — from roughing out raw materials to delivering finished goods — where there are not new and better ways of doing things standing ready for general use.

But the crucial question now is: Where is the money coming from to put to work these new and better ways of doing things?

Business has used its own resources so far... profits and reserves. The stock market, where industry traditionally has raised money from people willing to risk their savings, has been limping along, giving business no chance to get enough money on satisfactory terms. *Business now must look primarily to its own earnings for the money to carry out the improvements which are necessary if America is to keep itself strong and efficient.* The next editorial in this series will deal with this new and crucially-important role of profits.

But business can not count on profits alone to do the job. Profits are too uncertain.

From now on finding the money... to put new ideas and new equipment to work... to go ahead with the expansion and improvement that will thwart depression and build industrial strength . . . *calls for the support of all Americans everywhere.*

This comes right down to *you... for at stake is your chance for steady work, for better pay, for new things like television, and for more of the every-day things, like coal and clothing, of better quality and at less cost.*

By helping business get new and better tools, you will help yourself — and you will help build a more sound, more prosperous, better America.

James H. McGraw, Jr.

President, McGraw-Hill Publishing Company, Inc.

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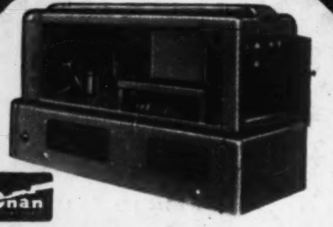

Onan standby electric plants, made by D. W. Onan & Sons, Inc., of Minneapolis, are widely used to protect business, hospitals, theaters, public buildings, farms and homes against costly powerline failures. With reliability of top importance on such jobs, Ford Industrial Engines are standard on many Onan models. Pictured is a 10,000 watt model powered by the Ford 120 Four Cylinder Industrial Engine.

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UP IN CENTRAL PARK
THURSDAY-ANOTHER PART OF FOREST

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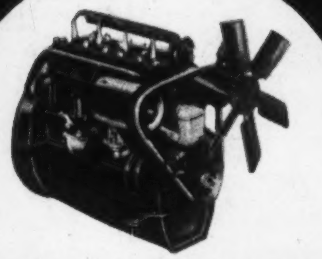

Ford 120 Four Cylinder Industrial Engine
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